

PRODUCTION  
ATLANTEAN  
CHASSIS  
AND  
BODYWORK

See Page 3



"THE TIMES" OF THE TRANSPORT WORLD

BRITISH  
AVIATION  
DISPLAYED  
AT  
FARNBOROUGH

See Page 5

VOL. LXXIX No. 2058

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### Flexibility in Fares Sought

ON September 1 the British Transport Commission submitted to the Transport Tribunal in draft a passenger charges scheme covering British Railways generally and the road and rail services of London Transport. The scheme seeks to establish maximum permissible levels of fares, but there is no immediate intention of raising fares to these levels if power is granted. The Act of 1953 was intended to give to the British Transport Commission a reasonable commercial freedom, but at the same time the Commission was required to put maximum levels on fares and charges. The scheme for maximum merchandise charges was approved last year, and was an exceedingly complicated matter. The Commission has now produced its proposals for maximum passenger fares but these are quite simple. The levels of maximum passenger charges, if approved, will afford headroom for such general or selective adjustments as may be necessary in the future, within the permitted maxima, without the necessity of having to make applications for specific increases of specific fares at relatively short notice, and will thus allow the Commission to pursue a more flexible commercial policy. Many journeys are today made at fares on a concession basis for one reason or other and the powerful competition of the private car will no doubt act in the direction of keeping fares lower even if the Commission were uncommercial enough to think otherwise. But even at 3d. a mile—which there is no intention of exacting in the foreseeable future—British railway fares would only be double prewar levels and would stand comparison with those of other countries of comparable standards of living. The latest figures for consumers' expenditure show that travel on British Railways and L.T.E. railways represents only 2d. out of every £ of personal expenditure. The Ministry of Labour inquiry into household expenditure showed the average household income in Greater London as £13 3s. 9d. a week. Expenditure on drink and tobacco averaged 24s. 5d. a week, that on travel to and from work only 5s. 3d. Other travel accounted for an expenditure of 6s. 6d. There are few illusions to which the general public clings to so faithfully as the hoary old canard that fares on our public transport system are high, or even "iniquitous" or "monstrously" high as the more excitable daily newspapers thought fit to suggest.

### Rate Freedom for U.S. Railroads

IMPORTANT amendments to the Interstate Commerce Act have been incorporated in the 1958 Transportation Act which has recently been passed through both houses of the United States Congress, leaving only the President's signature to be added. This new legislation reflects the report of a presidential advisory committee which appeared a little over three years ago. It placed emphasis upon the continued prosperity of common carriers, both rail and road. The railroads, in deserving cases, are likely to benefit from a \$500 million programme of government-guaranteed loans for the purchase of capital equipment or for maintenance and they are also favoured by a change in emphasis in the law on rate-making. In future, in cases involving competition between two or more different classes of carrier, the rates of one (and this clearly is a reference to railroads) "shall not be held up to a particular level to protect the traffic of any other mode of transport." This is part of a revised declaration of national transport policy, but the I.C.C. must "consider the facts and circumstances attending the movement of the traffic by the carrier or carriers." The president of the Association of American Railroads has hailed the new statute as making a positive contribution to sound national transport policy, relieving the railroads of some of their competitive handicaps. The I.C.C. will be able more readily to authorise discontinuance of rail services across state borders, previously the concern of state authorities, and road and rail carriers may also benefit from the tightening

up of exemptions for certain agricultural and kindred commodities. These now become subject to rate control and I.C.C. operating authority will be obligatory.

### Street Lighting and the Public

STREET lighting costs 7s. 2d. per head of the population per year (less than two-pence per week) and represents only 3 per cent of local government expenditure. This will be one of the points stressed on the stand of the Electrical Development Association at the exhibition at Harrogate held during the annual conference of the

increase and improve hotel accommodation, there is still only a limited number which can undertake to cater for coach parties. Such hotels tend to be grouped in the more popular tourist areas. Nonetheless, the possibilities of developing the attractions of less well-known districts are plainly there; in this connection much work is being carried out on what is already signposted in places as "The Coast Road." This has involved the complete reconstruction of many indifferent tracks and also the building of stretches of entirely new road. Some portions, like the Ring of Kerry, have, of course, been available for years, but there are now many other

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Association of Public Lighting Engineers, September 16-19. The display on the stand will emphasise that street lighting deserves more generous treatment, but above all it requires that serious consideration be given to the disparity of resources available to different local authorities for a service which is equally necessary for all. The case for better street lighting will be presented mainly by means of charts, diagrams and summarised data. For example, there is little justification for switching off street lighting while it can perform any useful purpose, yet of the Metropolitan boroughs, 80 per cent maintain all-night lighting, as do 50 per cent of the county boroughs, although to achieve 100 per cent all-night lighting only about 1s. 3d. per head per year would be added to the rates. Adequate street lighting can do very much to reduce the grave night time accident rate—by as much as 30 per cent in fact. Actually the number of serious and fatal accidents to adults at night time is now 66 per cent of those by day, and since 1945 the night time accident rate has increased by 100 per cent. One of the displays on the stand will reveal how on main roads the burden of costs falls unequally on adjoining authorities, typical figures of expenditure on street lighting being quoted, while the case will be put for a general raising of standards of lighting and greater uniformity. Street lighting, it will be explained, constitutes a fundamental part of the transport system, and the local authorities should not have to bear the whole burden of costs irrespective of their financial resources.

### The Coast of Ireland

DEPENDENCE of the Republic of Ireland upon tourists as a major source of revenue is well known, as are steps which have been taken by its Government to foster the industry. This year has seen the opening of the country, with certain restrictive conditions, to British operators of extended coach tours and twelve days spent recently on Irish roads led to encounters with the vehicles of several concerns, all of them comfortably loaded. Despite endeavours to

sections which, more often than not, share the attribute not only of being on the coast but also of being at a good height above the water. This undoubtedly adds much to the impressiveness of the scenery and perhaps gives these new ways a slight edge upon the coastal roads of south-west and western Scotland where the very pleasant roads tend to keep closer to the water. Not all these new roads in Ireland would seem to have been planned with motor coaches in mind nor have they yet been discovered by many car drivers, whether Irish or visitors. But there are potentialities for the coach operator wishing to offer his passengers an original tour through coastal scenery which can hold its own with any in the British Isles.

### Production Engineering Research

THIS week the eighth general assembly of the International Institution for Production Engineering Research is being held in Britain and delegates from 10 countries began by visiting the A.E.C. Southall works, where they were cordially welcomed by Sir William Black, chairman of A.E.C., Limited, who pointed out the perpetual dilemma of the heavy lorry vehicle builder who wanted to indulge in quantity production but was compelled to bow to the varied needs of customers. In the Southall factory the main fitting shops are being reorganised to operate on a flow production basis rather than on the present batch method; engine building has already been treated. We visited the new test house where production and development testing is carried out. Some 8,000 shaft horsepower is absorbed by the dynamometers; acoustic treatment has reduced the noise level to reasonable proportions. The congress enjoyed a reception at the Institution of Mechanical Engineers on September 1, had discussions in London the following day; visited the Standard works and met the Institution of Production Engineers at Leamington Spa on September 3; visited the Melton Mowbray laboratories of the Production Engineering Research Association; and then moved to Buxton, whence visits were made to a machine tool works and the

Manchester College of Technology. Since 1949, when the four founder members met, the International Institution has established a common meeting ground on which scientists in the field of production technology can discuss problems freely and representatives of 14 countries now do so.

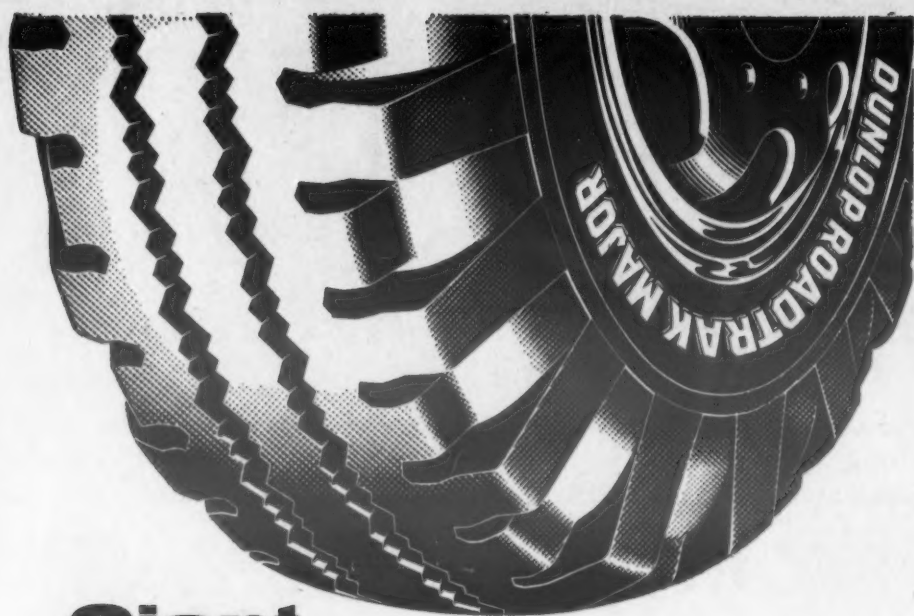
### Hamburg and Rubber Tyres

AN exhaustive inquiry is being made to see whether Hamburg's underground and elevated trains would benefit from using the pneumatic tyres at present in service on the Ligne 11 of the Paris Metropolitan system, Dr.-Ing. G. Gröche, technical officer of the Hamburg system, advises MODERN TRANSPORT. If it can be proved satisfactorily that the tyres will result in a financial saving to the undertaking and prove efficient under the different conditions obtaining in Hamburg, then a trial service will be instituted. A fresh investigation is needed because most of the track in Hamburg is above the surface, whereas the Paris conversion is wholly in tunnel. It would be pointless to operate trains with pneumatic tyres on a short all-tunnel service in Hamburg, as has been suggested, as there could thus be no proof of whether the undertaking could standardise on these tyres. The exposed elevated and surface tracks on the Hamburger Hochbahn present a big problem; owing to the city's winter climate they become quickly coated with frozen powdered snow or black ice in cold weather. Whether rubber tyres will be able to grip sufficiently well in such circumstances remains to be seen. Rail heating has been considered, but the cost is prohibitive. With rubber tyres steeper gradients could probably be introduced when laying new tracks. Dr. Gröche fears that in Hamburg conditions, running costs will increase with pneumatic tyres without being completely counterbalanced by higher speeds and possibly lower track costs.

### Basel Underground Plans

IN a summary now issued of plans made by the council of the Swiss city of Basel to reorganise the city transport system, it is stated that the underground railway which is to be built in the central area will carry trams and possibly also buses. Plans have now been completed for the first stages of construction of the underground system. The trams, which at present cover a total route distance of 41½ miles, it is stated, present traffic difficulties in many of the city's streets as well as being in some cases less economic than buses. It is thought that the network should not be destroyed even if it were to be reduced in coverage. Future tram mileage within the Basel area would be cut to 38½ miles and bus coverage increased from the present 19½ route-miles to 25. Actual tram line mileage—for many routes ran on common tracks for considerable distances—would be cut by 37 per cent, from 25½ to 16½ miles. In all highly congested areas the trams should "go underground" and operate as a "Tiefbahn." The tunnels of the projected system will not it appears be built exclusively to cater for trams. It will be a very long time before any underground railway or tramway system could be completed in the city and it is deemed probable that much technical development will take place during that time. One idea canvassed is that buses of conventional dimensions might be specially adapted so that they could be run on a live-rail track, the power rail to be placed in the middle of a bearing surface for rubber-tyred wheels similar to that at present used on one line of the Paris Metropolitan. With this scheme in mind, Basel plans to construct its tunnels accordingly. First stages in the building of the 4½-mile underground system would cost an estimated S.Fr.125,700,000 or roundly £10½ million. Five sections of tunnel planned are: City Centre, 1.6 miles; Rhine Tunnel—Kleinbasel, 0.8 mile; Mustermesse—Hirzbrunnen, 0.75 mile; St. Johanns—Vorstadt, 0.5 mile; and a linking tunnel via Wettsteinbrücke, 0.9 mile. The backbone of the system would be a line running from Claraplatz to Aeschenplatz via Mittlere Rheinbrücke—Markplatz—Barfüsserplatz.





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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

### The Demand for Air Transport

PUBLICATION last week of the report and accounts of British European Airways for the year ended March 31, 1958, brought, as we then recorded, a rather pleasant surprise in the form of a profit of over £1 million before providing for taxation. This was achieved in a year of abnormal difficulty by reason of the adverse trend of winter traffic; the level on international services represented an increase of less than 10 per cent in December, January and February and the domestic services merely maintained the previous year's level in December and fell below it in February. This experience has, of course, been widespread among airlines, most of which attribute it to business recession. This may well be correct, but it may also be due to a shrinking passenger potential. The plans of many airlines have envisaged the continued growth of air travel at the rates which have prevailed in recent years; such optimism undoubtedly accounts for the rush of two years ago to order jet aircraft of greater capacity than anything then flying on the air routes of the world. The result has not been entirely happy and, in a week that sees the annual flying display and exhibition of the Society of British Aircraft Constructors at Farnborough, it is not inappropriate to discuss whether the British approach to the future of air transport may not prove to have been more realistic.

### Cost of the Big Jet

A RECENT survey by the air transport committee of the International Civil Aviation Organisation and another prepared for President Eisenhower by Dr. Paul Cherrington, professor of business administration at Harvard, both conclude quite firmly that the airlines have ordered too much capacity for the traffic that is likely to be offering. The financing of these orders is also bound to be very difficult and, perhaps, in some cases impossible. These problems do not, moreover, represent the end. The new jet aircraft, at least so far as the American designs are concerned, require still longer runways than are generally available and airport authorities are faced with the need to indulge in further extensions; they will also have to strengthen taxi-tracks and aprons to cope with the weight of the new machines, apart from providing much additional equipment. The publication of the I.C.A.O. survey was followed by an agonised shriek from the International Air Transport Association which alleged undue pessimism and, furthermore, referred to the indirect benefits which the new aircraft would bring to various countries. This, of course, is a reference to tourism as a valuable invisible export and the ability of international airlines to earn foreign currency. Nobody would gainsay the importance of these factors to the economy of any nation, but the fact must be faced that some countries feel that further airport improvements of the type required for these new large aircraft must be balanced by increases in airport charges. Any proposals of this kind are vigorously opposed by I.A.T.A. There could well be a revision of the system of charging so that the machines for which the improvements had been made bore a substantially larger share than those still capable of using the facilities as they exist today. It must be admitted that, if this were done, the British aircraft industry would stand to benefit to a marked degree, but nonetheless it would be equally in the interests of a much wider field.

### Advantages of Versatility

THE success of the economy class on the North Atlantic air routes has been substantial but it should not be allowed, as it is tending to do, to blind people to the fact that this is one of those sectors which is outside the ordinary run. There must also be a limit to the amount of new traffic which even the North Atlantic can attract, for, reasonable as its fares may be, most of those using the facility are not likely to do so again for a number of years,

while, westbound at least, quite a number of emigrants use the service with no intention of returning. Outside the United States, there are few intercontinental sectors on which more than 4,000 seats a week are offered, and a great many on which the total is barely 1,000. Almost all are shared by at least five operators and, making every allowance for increased traffic, it is hard to see how economic utilisation of the large and expensive jet aircraft is going to be attained. They may, it is true, attract a proportion of the loads from local carriers on fifth freedom sectors where they are using older equipment—a fact which has caused some of these to indulge in jet aircraft plans before they really need so to do on any other than competitive grounds—but the density of seating required to give the jets an economic load may have reactions in comparison with the less crowded shorter range types. B.O.A.C. expects to achieve an average annual Comet 4 utilisation of 3,850 hr. by the end of 1960 and that is a high figure in all conscience, but it will have the advantage of an aircraft of more reasonable size and great versatility by reason of its ability to use far more airports than the very big jets.

### A Time to Pause

IN its report B.E.A. shows that on its routes, which are so largely of the short-haul category, it was able in 1957-58 to attain averages of 2,383 and 1,943 hr. utilisation of its Viscount 701 and 802 aircraft respectively and that was really a very good figure. There is no comparable figure in the B.O.A.C. report, which is a pity, but then B.E.A. has for years been distinguished for publishing what is by a long way the most informative report issued by any airline. It would help a great deal if others were equally forthcoming. In order to meet competition on its routes B.E.A. has six Comet 4Bs on order to fit any gap that might otherwise exist until the appearance of the DH121 in 1963-64. Since there are also the turboprop Vickers Vanguard with delivery of 20 commencing in 1960 it would seem that the corporation has taken every precaution against being caught unawares while, at the same time, endeavouring to relate its orders to realistic appraisal of the future. There is also much to be said for the view that international airlines could well consider the possibility of retiming re-equipment programmes since, as the chairman of B.E.A., Lord Douglas of Kirtleside, remarked the other day, the development of aircraft beyond the stage of high subsonic speeds which they were now reaching is likely to be both costly and lengthy. This point was also made very strongly by Mr. Harold Watkinson, Minister of Transport and Civil Aviation, in his speech last Monday at the annual flying display dinner of the S.B.A.C.

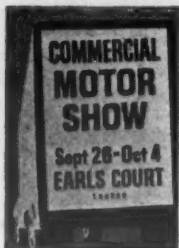
### Scope for the Manufacturers

HIS view went perhaps further, for he considered that when the next advance did come it must be to at least twice the speed of sound. Some thousands of millions of pounds would have to be spent to breed the next generation of civil aircraft. Thus it would perhaps be wise to make the most of the generation now coming into service. Earlier he had suggested that aircraft performance had reached so high a level that airlines should in their own interest, and with the co-operation of manufacturers, study more closely the economic life of aircraft types that gave the public good service before considering their replacement. We may not always agree with the Minister, but he certainly made a good point in this case. That is not to imply that the aircraft industry need go short of work. A suggestion in a leading article in *The Times* last week that the Services might buy large freight aircraft in America on grounds of economy and more rapid delivery drew a cogent reply from the director of the S.B.A.C., Mr. E. C. Bowyer, who pointed out that British projects for the type of aircraft required had been before the appropriate Government Departments for as long as five years and that still no decision had been reached. He suggested, with reason, that the causes of such delay required examination and pointed to the adverse effect both of the delay and of any order in the United States upon the exports of the aircraft industry. Here, at any rate, is a sound case for Government action.

### Forthcoming Events

- September 8-12.—Municipal Passenger Transport Association. Annual conference. At Blackpool.
- September 8-13.—First International Congress of the Aeronautical Sciences. At Madrid.
- September 10.—Light Railway Transport League. "A Trio of Tramways: Maidstone, Northampton and Sunderland." At 153 Drummond Street, London, N.W.1. 3 p.m.
- September 11.—Railway Correspondence and Travel Society (Bristol). Paper by Mr. D. S. M. Barrie, "The Pre-Grouping Railways of South Wales." At Grosvenor Hotel, Bristol. 7.15 p.m.
- September 12.—Electric Railway Society (Birmingham). Paper by Mr. B. J. Frimore, "Rapid Transit and Suburban Railways." At Exchange and Engineering Centre, Birmingham. 7 p.m.
- September 13-14.—Railway and Canal Historical Society. Visit to remains of Somerset Coal Canal and railways. Dorset and Somerset Canal, broad gauge G.W.R. architecture and Kennet and Avon Canal features. Based on Bradford-on-Avon.
- September 17.—Institute of Road Transport Engineers (Western). Visit to Austin Motor Co., Limited.
- September 26-28.—British Railways (Southern Region) Lecture and Debating Society. Weekend visit to Scotland including Thornton Marshalling Yard and the Forth Bridge.
- September 26-October 4.—Commercial Motor Transport Exhibition. At Earls Court.
- September 28-October 7.—International Railway Congress. At Madrid.
- September 29.—Passenger Vehicle Operators Association. Annual dinner-dance. At Grosvenor House, London.
- October 2-12.—International Motor Show. At Paris.
- October 4.—Omnibus Society. Annual dinner. At Clarendon Restaurant, Hammersmith, W.6. 7 for 7.30 p.m.
- October 13-15.—Road Haulage Association. Annual conference. At Torquay.
- October 26-31.—International Road Federation world meeting. At Mexico City.
- November 5-16.—International Motor Show. At Turin.





## PRODUCTION ATLANTEAN ON SHOW

### Leyland Rear-Engine Double-Decker Introduced

WITH METROPOLITAN-CAMMELL-WEYMANN 78 AND 73 SEAT BODIES

SINCE the introduction at the last Commercial Vehicle Show of the Leyland-M.C.W. Atlantean integral double-deck bus, the design has undergone substantial change and extensive testing to develop a vehicle that would retain the operating advantages of the prototype and could yet be produced at a price in line with that of the normal double-decker. As well as retaining the name Atlantean, the new vehicle, of which production versions are to be shown at the forthcoming Commercial Vehicle Show, also retains the features of high seating capacity, low front entrance with power-operated doors and rear-mounted diesel engine which, with the transmission, is accessible and very quickly removable as a unit.

Outwardly, the new bus is very similar in appearance to the earlier integral Atlantean but it now appears with a separate chassis designed to take a body to suit individual choice. The original torsion-bar independent front suspension is replaced by conventional progressive-type leaf springs and whereas the prototype accommodated 78 seats in a standard overall height of 16 ft. 5 in., the present chassis requires different types of body to provide (a) maximum capacity of 78 seats with central gangways throughout and (b) a low height of 16 ft. 4 in. unladen, when the seating capacity is reduced to 73 and a short rear section of the upper deck has four-abreast seating and a side gangway. At Earls Court bodies of both types developed by Metropolitan-Cammell-Weymann, Limited, will be seen, low-height versions on the Leyland and Weymann stands and a normal-height vehicle on the Metropolitan-Cammell stand. An Atlantean chassis, designated PDR 1/1, will also be shown by Leyland.

#### Detachable Power Pack

The chassis has a wheelbase of 16 ft. 3 in. with a front overhang of 80½ in. and a rear overhang of

polyester-glass fibre and, although large, weighs less than 100 lb. and is easily handled.

#### Hydraulic Governor

The standard Atlantean power unit is the well-known Leyland 0.600 vertical diesel, developing 125 h.p. It is basically similar to the vertical engine employed in the Titan range, but it has a

cooling system is pressurised to 4 p.s.i. and incorporates a no-loss system. If the 4 lb. pressure is exceeded, coolant flows through a relief valve to a reservoir built integral with the header tank. When the coolant contracts in the radiator a second valve opens and the coolant in the reservoir is syphoned into the main system.

From the gearbox the drive is taken to an angle-

spiral bevel gearing offset to the left-hand side. It has a one-piece forged casing suspended from the chassis on 5 ft. 2 in. long semi-elliptic springs attached by 1½ in. diameter chrome-plated steel shackles. A Leyland patented stabiliser anchors the axle to a tubular crossmember to prevent excessive rolling at corners. Dual-rate springs, 4 ft. 2 in. long, assisted by Armstrong hydraulic shock absorbers are fitted to the front axle.

#### Good Steering Lock

Although the front springs are outriggered from the outside of the framemembers to provide a wide base for lateral stability, it has been possible to design the steering linkage so that the wheels have an excellent lock. Steering is taken from the cam and double-roller mechanism to a relay lever positioned within the frame members. A supplementary drag link, well clear of the road wheel on full lock, connects to the stub-axle arm. With this arrangement, the turning circle is as small as 60 ft. and the swept circle for a complete bus is only 68 ft. The air-pressure braking system is identical to that used so successfully on the Leyland Royal Tiger Worldmaster and provides a total lining area of 702 sq. in. Brake drums are also the well-ribbed components as used on the Worldmaster, 15½ in. in diameter, 5 in. wide at the front and 8 in. wide at the rear. In addition to the air reservoir for the brakes, there is also a second reservoir for operating the door gear and the pneumatic actuation of the change-speed mechanism for the Pneumo-Cyclic gearbox. Both these reservoirs are mounted on the chassis front overhang below the cab floor.

#### Twin Fuel Tanks

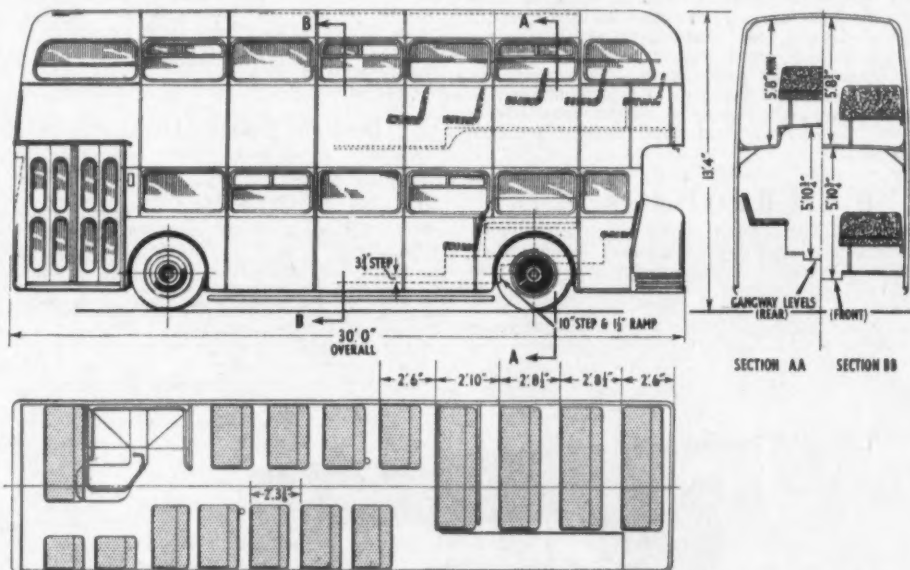
Because of the low height of the frame, twin 19-gal. interconnected fuel tanks of shallow depth have been fitted adjacent to one another along the outside of the right-hand chassis frame member. Lighting and starting is the normal 24-volt system with a 1,320-watt dynamo and 174 amp-hr. capacity batteries. Just below the two-spoke steering wheel, an attractive panel is fitted on the steering column. This carries the small electric change-speed lever, an electric speedometer with



The first two M.C.W. Atlantean bodies taking shape, with a third chassis in the foreground, at Metropolitan-Cammell Elmdon works

slight redistribution of auxiliaries to suit the rear engine layout. The governor is a hydraulic unit to ensure constant idling at the lowest speed possible. The clutch is a standard centrifugal unit, developed by Leyland and now available on most of the company's passenger models. It has six pivoted weights that automatically engage the

drive box, which houses a pair of spiral bevel gears, having a ratio of 1.263 to 1, and then through a pair of helical spur reduction gears which can be changed in size to give ratios to suit the requirements of individual operators. Four different ratios are available: 1.56, 1.37, 1.207 and 1.065 to 1. By using these gears for the main transmission reduction, it has been possible to incorporate a rear axle with one axle ratio of 3.083 to 1, a considerable benefit in reducing the quantity of spares carried by an operator who runs a fleet of buses



Details of the general arrangement and the upper-deck seating plan of the 73-seat low-height M.C.W. body. The lower deck has a central gangway throughout and seats 34 while the normal-height body has a central gangway and 44 seats in the upper saloon

80½ in. The extension at the rear forms a substantial cradle to carry the sub-frame of the power pack, which includes a rear bumper bar. This extension is so bolted to the main chassis frame that the main side frame-members themselves take any thrust or shock from the rear. This arrangement, together with the rear bumper bar, enables the whole chassis to absorb and limit the extent of any rear-end collision.

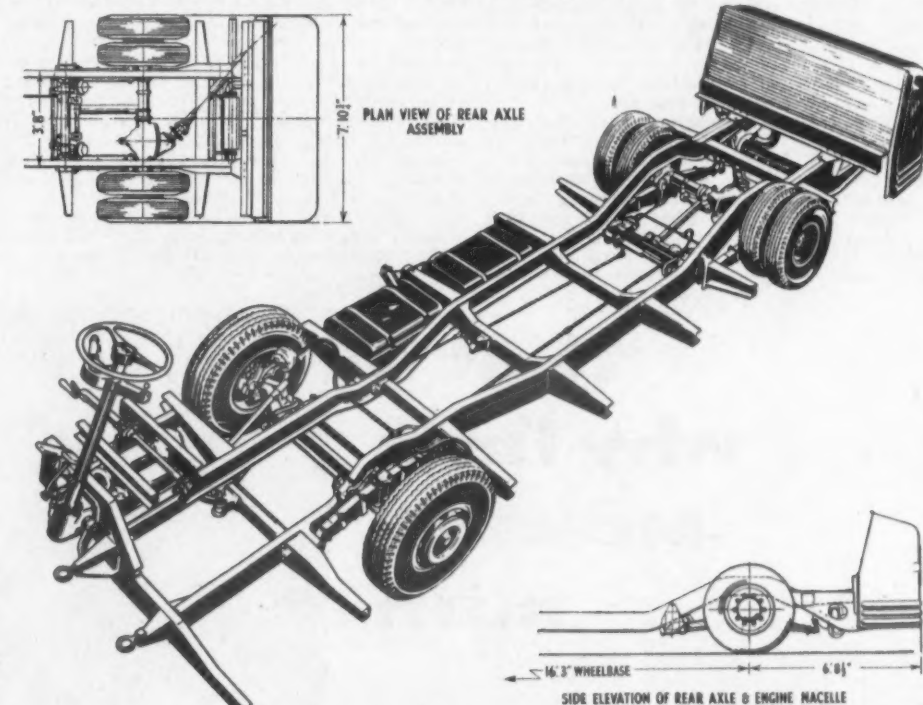
The method of mounting the power pack reduces the bending moments of the frame sidemembers along their midsection with the result that the side-members require only a maximum depth of 8 in. to ensure a safe stress value. These side-members are ½ in. thick alloy-steel channel-section pressings with 3-in. wide flanges. They have a pronounced sweep over the rear axle and a slight rise over the front axle. The right-hand sidemember continues at the same height along the front overhang to form a support for the driver's cab and controls, but the left-hand side-member dips to carry the front entrance platform.

Crossmembers, as well as outrigger brackets which serve as direct floor supports and provide a base for anchoring the body pillars, are bolted in position. Tubular crossmembers are used where spring anchor brackets are attached, except the one behind the rear axle which has a top-hat section, while other crossmembers are channel sections. The engine is mounted transversely across the rear extension and is unit constructed with the clutch, gearbox, angle-drive and the cooling and fuel-injection systems to form a completely self-contained power pack. It can therefore be run as a unit when removed from the chassis by merely connecting up a fuel supply and exhaust pipe, with obvious advantages.

Removal and installation of the pack, complete with sub-frame on which it is carried on four flexible mountings, is said to take only a matter of minutes with a fork-lift truck. Full access is provided for the power pack in the chassis through a hinged engine cowl, which is constructed of

single dry plate at 500 r.p.m. At 750 r.p.m., full pressure is applied to provide a positive drive. Tests have shown that the use of this unit results in 3 to 5 per cent more fuel economy than with a fluid drive.

The Leyland Pneumo-Cyclic gearbox has four speeds with electro-pneumatic change. It can be supplied with full or semi-automatic gearchange to suit the operator. Mounted above the gearbox is a cast-aluminium radiator with a depth of 10 rows of cooling tubes. The intake side of the radiator is shrouded by a metal casing which makes an airtight joint with a similar type of casing attached to the plastics cowl. This ensures that all air drawn through the radiator is taken from the outside atmosphere through a grille on the side of the cowl. The arrangement prevents recirculation of the cooling air within the cowl and



Our artist's drawing, with rear axle and engine mounting detail, of the Leyland Atlantean rear-engine chassis for 73-78 seat front-entrance double-deck bus

with mixed axle ratios. The Atlantean chassis thus provides a choice in overall ratios of 6.074, 5.334, 4.702, or 4.15 to 1.

#### Electric Speedometer

Incorporated in the angle-drive box is a drive for an electric speedometer and one for the speed-sensing a.c. generator required when the fully

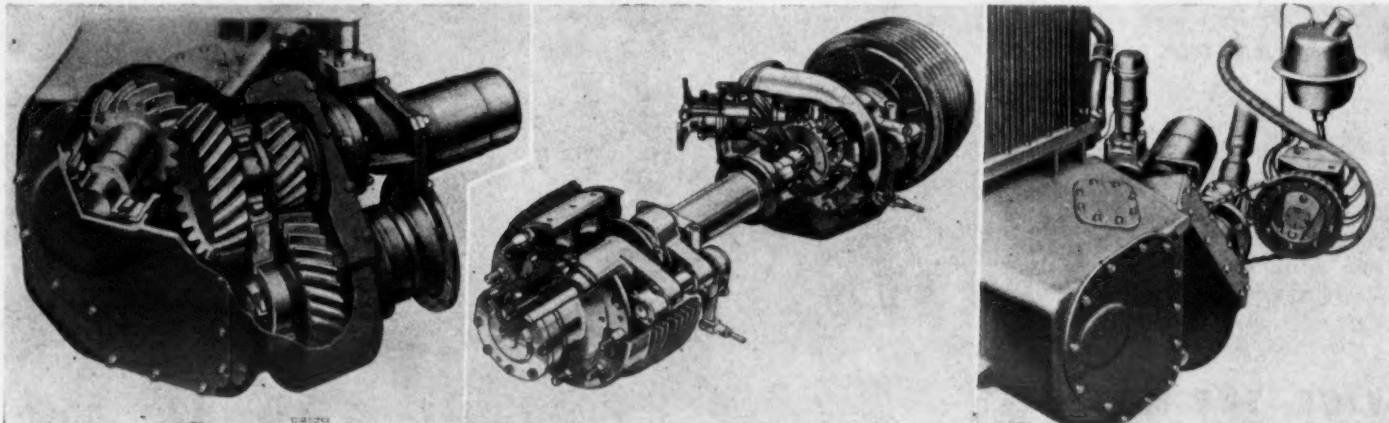
mileage recorder, horn, headlamp and trafficator switches and air-pressure and water-temperature warning lights.

A switchboard contains chassis lighting controls, indicator lamps for dynamo charging, oil pressure and direction indicators, interconnected relays and buzzer warning device for low air pressure and high engine temperature, as well as the horn relays and thermal cut-outs for the change-speed control circuit. Block-lens headlamps with pre-focused bulbs and the foglamps and sidelamps are provided for fitment by the bodybuilder. Equipped with the standard 10.00-20 12-ply tyres, the chassis weighs 5 tons 12 cwt. This is divided into 1 ton 3 cwt. on the front axle and 4 tons 9 cwt. on the rear. In running trim as a complete bus, its design ensures equal tyre loadings in the ratio of 1 to 2 for front and rear axles.

#### Integrated Coachwork

The M.C.W. bodies have been designed for integration with the Atlantean chassis and have overall dimensions of 30 ft. by 8 ft. The normal-height body is 14 ft. 4 in. overall unladen and takes 78 seats (34 down and 44 up) while the lowbridge version is 13 ft. 4 in. high unladen and has 73 seats (34 down and 39 up). Both types have a single low step up to a platform ahead of the front axle, which is enclosed by electrically operated double-jackknife doors under the control and supervision of the driver, and a staircase from the platform to the upper deck behind the full-depth partition at the rear of the driving compartment.

(To be continued)



The angle drive gears and a pair of spiral bevel gears both give stages of reduction (which can be varied to suit individual requirements), consequently reducing the tooth loading of the conventional single-reduction spiral bevel rear axle; on the extreme right is seen the cast-aluminium radiator mounted above the Pneumo-Cyclic gearbox and the belt-driven automatic chassis lubricator. The a.c. generator required for fully automatic gearbox control can be seen in both left- and right-hand pictures

provides a constant flow of expanded heated air from the base of the cowl which prevents entry of road dust into the engine compartment when the bus is on the move.

#### No-Loss Coolant System

To maintain a high volume of cooling air a 17-in. diameter fan, driven at 1.6 times engine speed, runs at the outlet side of the radiator in a cast-aluminium cowl with tip clearances as low as 0.010 in., thus ensuring high efficiency. The

automatic gearchange system is fitted. A pulley attached to the angle-drive output shaft drives an automatic chassis lubricator (either Clayton Dewandre or Tecalet) by belt. The lubricator automatically feeds through flexible nylon pipes to 24 lubrication points and only three nipples on the large 1700-type Hardy Spicer propeller shaft needle-roller universal joints have to be lubricated manually.

The rear axle arrangement is based on Leyland conventional design, but with a single-reduction



## LORRY—BUS—COACH

## Aberdeen Hauliers Merge

TWO of Aberdeen's largest road haulage contractors—Charles Alexander and Partners (Transport), Limited, and John Rhind (Haulage Contractors), Limited—have amalgamated in a new enterprise. The new company, known as John Rhind Transport, Limited, with headquarters at the Ice Rink, South Anderson Drive, Aberdeen, has capital of £100,000 in £1 shares. Mr. Charles Alexander told our correspondent: "We are cutting out unnecessary expenses in other towns where we both had depots. It is an amalgamation of convenience. We shall use my depots in London, Liverpool, Manchester, Glasgow and Edinburgh," said Mr. Alexander. "This will cut down overheads. In Aberdeen, however, although the headquarters are at the Ice Rink, my depot at Old Ford Road will also be necessary." The new company will be able to muster a fleet of close on 200 vehicles.

## C-Licence Statistics

AT the end of June this year the total number of vehicles authorised under C-licences had advanced to 1,082,855 from 1,047,138 12 months previously. As was the case in the previous quarter, vehicles recorded in the two categories 1½-2 tons and 2-2½ tons showed a slight reduction compared with the same date in 1957.

## Loss on Colombo Trolleybuses

THIS year the Colombo municipal trolleybus service is expected to be burdened with an additional loss of Rs.350,000. They have been incurring an annual loss of Rs.3,000,000. The general manager of the Municipal Passenger Transport Service has told the municipal commissioner that he should take up with the Minister of Transport and Works the question of eliminating competition for the trolleybuses from vehicles operated by the Ceylon Transport Board. The C.T.B. recently rerouted its service and this has resulted in a number of its buses plying on the routes in the city formerly served only by the trolleybuses. The new loss of Rs.350,000 has been the result of this.

## Objections to Licence Substitutions

ANNOUNCING decision on an appeal against the grant by the Scottish area Licensing Authority of licence substitution to Highland Haulage, Limited, of Inverness, the Transport Tribunal states that the decision of the Road and Rail Appeal Tribunal in the R.A.H. Transporters appeal (29T.C. 290) cannot be supported and should not be followed. The licensing authority accepted a submission on behalf of Highland Haulage that four objectors had no *locus standi*, but he allowed them to address him.

In the R.A.H. Transporters case the then Tribunal said, as obiter dictum, that "the mere substitution of a vehicle for a vehicle specified in a licence even though the substituted vehicle is of a greater unladen weight is not to be regarded as an application under section 11(3) of the 1933 Act for a direction that an additional vehicle shall be specified in the licence." The Tribunal in the

present decision overrules this view. It finds that the sort of licence variation under consideration (one vehicle substituted for another) is still an application for an "additional" vehicle to be specified in the licence within the meaning of section 11(3). The effect is that the licensing authority is bound to take objections into consideration, unless the substitution is by a vehicle of the same or of a less unladen weight. The grant is set aside and the case referred back for re-hearing.

## Licensing of Assisted Services

ON appeal to the Minister of Transport, Mr. W. G. Abbott (t/a Godfrey Abbott Motor Tours) has been authorised to operate an express service from Stretford, Sale and Timperley to Knutsford instead of the North Western Road Car Co., Limited. The Minister agrees with his

either stage or express services as appropriate depending upon the conditions which the commissioners decided to attach concerning the fares to be charged to the individual passengers. The commissioners are to revoke the licences granted to North Western.

## Changed User of Acquired Vehicles

GIVING his reserved judgment after a public inquiry involving Siddle C. Cook, Limited, Consett, Co. Durham, the Northern area Licensing Authority, Mr. J. Hanlon, stated that the company had used undesirable methods of obtaining additional tonnage of vehicles without proving the need. Mr. Hanlon recalled that at a previous sitting the licence holder had been called upon to show reason why certain B-licences should not be revoked or suspended on the grounds that a statement of intention had not been carried out. Mr. Hanlon stated that he had not been told at any time that the vehicles concerned, which were taken over from another operator, were to be used for carrying steel for Consett Iron Co., Limited, and he had understood that they would be used for carrying tar, coke and empty barrels

says he has not attached weight to the evidence offered by either side as to the past history leading up to the present differences between the fares authorised to the appellant and to the respondent (Southdown Motor Services, Limited). In the present case it appeared that the inconvenience caused to the public by reason of the protective fares was slight but that on the other hand the removal of the protection would cause little or no harm to Southdown services.

## Tax on Loss-of-Use Claims

COMMENTING upon the recent inconclusive report of the Law Reform Committee dealing with the deduction of tax from compensation payable to a person injured in an accident Mr. R. Morton Mitchell, chief executive officer of the R.H.A., says that it is to be hoped that the Court of Appeal and the House of Lords will take an early opportunity to clarify this important issue. It is recalled that before the decision in the case of the British Transport Commission v. Gourley, which was that examined by the Law Reform Committee, it was settled law that in assessing damages for personal injuries "the court had no concern with the plaintiff's liability to income tax or surtax." The decision of the House of Lords in Gourley's case (arising out of the Wealdstone rail disaster) reduced the amount of damages awarded to the plaintiff from £37,720 to £6,695 in order to take account of the income tax and surtax he would have had to pay on his earnings if he had not been injured. There is at least a theoretical possibility, says Mr. Mitchell, that a plaintiff may thus suffer tax twice over.

In the loss of use category, two attempts by guilty parties to obtain financial advantage recently failed. The defendants were covered by insurance, so that the responsibility for attempting to deduct tax rested upon the insurance company or insurance syndicate. In the one case a garage company had a loss of use claim from which the insurers attempted to deduct tax at the rate of 8s. 6d. in the pound. The garage company's solicitors threatened to issue a writ and the insurers paid up in full. The second case was also one of loss of use of a commercial vehicle and again the insurers acting for the defendants threatened to deduct tax. Here negotiations were prolonged, and as the R.H.A. was prepared to test the issue proceedings have been pending in the High Court. Heavy legal expenses were involved, including fees of eminent Queen's Counsel, but before a hearing could take place the insurers gave in and paid compensation in full. The opportunity of testing the issue authoritatively in the High Court has thus been lost for the time being. In Herring v. British Transport Commission, where a claim for damages included an item representing the loss of the earnings which would have been derived by the plaintiff from the use of his lorry it was held that the item was a receipt of the plaintiff's business so that the rule in Gourley's case could not be applied.

## Bus and Coach Developments

Yet another application has been made for the excursions and tours from Stedham of W. A. Potter. This one is by Gayline Continental Tours, Limited.

A. E. Bengry (Primrose Motor Services), Leominster, applies for the service thence to Birley operated by G. H. Yeomans.

D. L. Wolstenholme (North Dorset Motor Services), Wincanton, proposes two new Tuesday and Friday routes. One from Wincanton would operate via Bayford, Leigh Common, Penselwood, West Bourton and Cuckington, and the other would be from Wincanton to Charlton Musgrove via Bayford and Leigh Common. R. E. Wake, Sparkford, is applying to divert his Wednesday and Friday circular service from Wincanton to take in Charlton Musgrove.



Last day of operation of the South Lancashire Transport trolleybuses was August 31; the scene above is at Worsley on the Atherton—Farnworth service; right, St. Helens ceased trolleybus operation on June 30

inspector (Mr. J. M. Glen) that the traffic commissioners have discretion to grant licences in the light of all the relevant factors. On previous appeals concerning services to be provided under assisted travel schemes, he has said that the award of the contract should be regarded as a material factor when deciding between competing applicants. In this instance he has carefully considered the claim of North Western to operate the service on the ground that it is the provider of remunerative stage services in the neighbourhood, but this evidence in this case was not sufficiently conclusive to outweigh the claim of Mr. Abbott who had been running the service before it required to be licensed and who had secured the contract for its continuance as an assisted travel scheme.

Argument took place at the inquiry as to whether the services in question should be licensed as services of stage or express carriages. The Minister is of opinion that, for the purposes of section 39 of the Road Traffic Act, 1956, the relevant separate fares are those paid by the individual passengers, not the sum paid by the employer for hiring the coach or subdivisions of that sum. It would have been open to the North Western area Commissioners on the applications before them to make grants to either operator for

for the Consett works. Mr. Siddle C. Cook claimed that the previous owner had applied to carry steel but Mr. Hanlon said it was not mentioned in the application. Assurances had been given, said Mr. Hanlon, that the vehicles were unsuitable and would not be used for steel carrying, but Cook had admitted carrying steel in them since 1955. Mr. Hanlon said he was very reluctant to take the extreme step of revoking a licence. The company had had to face a great deal of competition, which had made it difficult to prove need for additional tonnage. He had decided that the licence issued three years ago, which did not include carrying steel, should be continued, with the condition that goods carried for Consett Iron Co., Limited, should be limited to a 30-mile radius. An application to have four of the vehicles concerned replaced by two more suitable for steel was refused.

## B. S. Williams Protective Fares

PROTECTIVE fares which B. S. Williams, Limited, has been operating in Petersfield on its Petersfield—Stedham service are to be removed and intermediate fares have been authorised on appeal, against the recommendation of the M.O.T. inspector. The Minister of Transport

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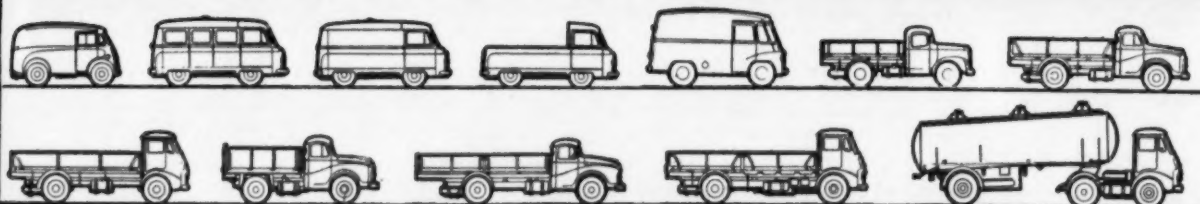
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The latest example of flight refuelling—a method in which Britain pioneered—was given by two R.A.F. Vickers Valiants

THE opening day of the 19th flying display and exhibition organised by the Society of British Aircraft Constructors was almost too good to be true and outran the somewhat cautious predictions of the weather forecasters who had prophesied that early morning mist would be followed by bright intervals. In the upshot Monday was a day of almost continuous sunshine and the sight of serried ranks of technicians in their shirtsleeves was calculated to recall sports functions of the passing summer when the aspect of the crowd was made sombre by umbrellas held aloft and innumerable mackintoshes. As it was, the new rotating wing aircraft, for in many aspects they dominated the show, and the other new machines could be seen at their best. As usual the exhibition hall has much of interest and the enlarged equipment section shows the amount of attention now being paid to ground services at airports and, for that matter, Service aerodromes.

Since some of the aircraft manufacturing firms are concerned at the moment with projects rather than quantity production and had, of necessity, to rely upon models on their stands to indicate what they have in mind, it is most convenient to treat the aircraft section in alphabetical order, indicating which commercial types actually flew. Sir W. G. Armstrong Whitworth Aircraft, Limited, is pressing ahead with the construction of the AW650 Argosy and the first of these should fly before the end of the year. The stand in the exhibition hall includes a section of the fuselage with a representative freight load and, for good measure, some passenger seats since it is realised that, while the aircraft is basically a freighter, the fact that it is pressurised and can be used to carry passengers will add to its attractions for the would-be purchaser. It has four Rolls-Royce Dart 526 engines, a gross weight of 82,000 lb. and can cruise at 280 m.p.h.

#### A Turboprop Transport

With its Beverley C1 doing yeoman work with three squadrons of the Royal Air Force, Blackburn and General Aircraft, Limited, has been for some time engaged upon the design of a more versatile aircraft with turboprop engines and a model of the B107A appears on the stand. It would have four Rolls-Royce Tyne engines with de Havilland four dual blade propellers of 16 ft. 6 in. diameter. It would use the Beverley wing and tail unit and operating from a standard type of airfield would carry a 40,000-lb. payload at cruising speeds up to 310 knots for 2,550 nautical miles. Its maximum payload of 58,000 lb. could be carried 1,300 nautical miles and fuel capacity would give it a range of 4,400 miles. With reduced, but still reasonable, payloads it would be capable of operating off 800-900 yd. strips. The Bristol Britannia did not take part in the flying display but one in B.O.A.C. colours appears in the static park and there was on the opening day the usual lengthy queue of people waiting to inspect the interior. The latest version of this large turboprop airliner to be announced is the 320 series with the more powerful Proteus 765 which has an e.h.p. of 4,445 compared with 4,120 e.h.p. of the 755. All-up weight of the 320 is

## 1958 AT FARNBOROUGH

### British Aviation Displayed

#### PROGRESS IN THE HELICOPTER FIELD

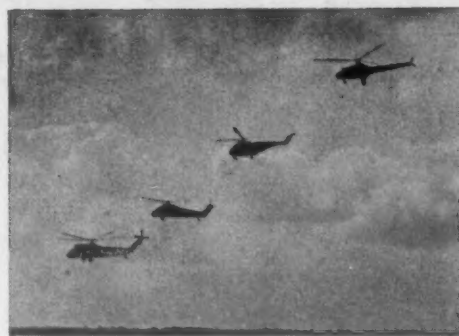
aircraft, therefore, to obtain its certificate of airworthiness is particularly urgent and the two so far completed are busily engaged in accumulating flying hours. In consequence the aircraft was not available for inspection at Farnborough on Monday but it duly appeared in order to fly past—steal past would almost be a better word so quiet is it in flight—and it thereafter landed in order to be on show and to fly on Tuesday and Wednesday. Immediately after it left to be prepared for a proving flight to the Far East. This machine—G-APDB—has been given the new standard interior décor which has been adopted by B.O.A.C. and is equipped with Microcell seats. Sixteen first-class passengers are accommodated in the forward cabin and 43 tourist-class passengers in the rear cabin.

#### The Comets

We were able on the Thursday preceding Farnborough to fly in the first of the Comet 4s (G-APDA) and it may be said at once that it is a most impressive experience. The noise level is remarkably low in the forward cabin—the quiet-

transport aircraft based on the Victor B2 bomber and the other is the HP113 which will incorporate a system of laminar flow upon which the company has been working for many years. The air is sucked out of the wing boundary layer through narrow spanwise slots. It will be a relatively small jet aircraft with two Bristol Orpheus engines and an all-up weight of 36,000 lb. Cruising at 528 m.p.h. it will have a maximum payload of 2,520 lb. and a range of 4,330 statute miles at 1,000 lb. payload. Hunting Aircraft is represented again by the President, the civil version of the Pembroke which was, in turn, derived from the Prince. With two Alvis Leonides engines it cruises at just over 190 m.p.h. and can carry up to 12 passengers. This manufacturer has an interesting project—the H107—for a twin-jet aircraft carrying nearly 50 passengers on stages of up to 800 miles. The power units envisaged are the Bristol Orpheus.

Rapid progress from drawing board to flight has been achieved by Saunders-Roe with the P531 helicopter. This carries five people and the engine is a Blackburn Turbo free turbine of 425 s.h.p.



The four Westland helicopters in formation for their most impressive finale to their display

passengers to be carried when traffic is heavy. Wardrobe space is provided immediately forward of the rear pressure bulkhead and a galley is located aft of the main cabin. The Vickers stand has model aircraft representing the progress of the Viscount in the past 10 years, also some very clear figures of the Vanguard and VC10 operating potential.

For the first time four distinctive types of helicopters built by the same manufacturer are taking part in this year's display. They are the Westland Widgeon, Whirlwind, Wessex and Westminster—all in simultaneous production. Their combined finale outdid, in our view, any of the spectacular displays by the Services. It was really delightful. Especially outstanding in the demonstrations is the turbine-powered Westminster crane-transporter, making its appearance in public for the first time. This large twin-engine helicopter, with its open framework fuselage structure, designed for speed and economy in construction, was a most unusual sight.

Fulfilling the need for a large military transport helicopter, it is able to carry both internally and externally heavy field equipment, atomic missiles and, with sections of the fuselage covered, Commando troops. In civil engineering, electrical and other heavy industries concerned with industrial development the Westminster will also have many applications, whilst a civil transport version with conventional fuselage and a maximum seating capacity for 46 passengers can meet requirements for intercity and inter-continental travel. It can fly with full payload on one of its two engines. These are Napier Eland rear-drive shaft turbines, each developing 3,500 s.h.p. Range is 160 nautical miles and it has a cruising speed of 115 m.p.h. The fuselage is 89 ft. 3 in. long and the diameter of the five-bladed rotor is 72 ft. It may be noted that the Westminster has been developed by Westland without government subsidy or order. It was built and flying in less than eight months.

Apart from the de Havilland Comet 3B, which is undertaking thrust reversal research in the course of its general test duties, there are other aircraft in the flying display which embody development power units for Rolls-Royce. One is the erstwhile B.E.A. Elizabethan Sir Walter Raleigh (G-ALZR) which whispered above the crowd with its two Tyne turboprop engines. The second aircraft is the Vulcan B1 engine testbed which has four Conway by-pass jet engines. This gives the impression of great power and has a reasonable noise level. With the promise of operating economy inherent in the design, the omens seem favourable to say the least.

#### Engines and Equipment

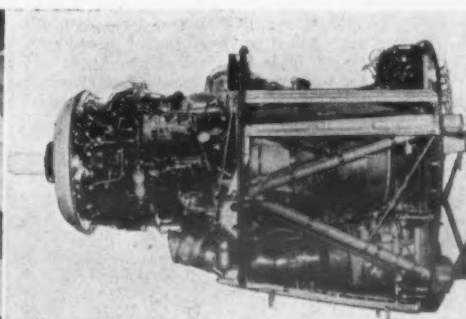
This is, of course, the first year in which we have seen a stand bearing the sign "Bristol-Siddeley" and exhibits include the Olympus and Sapphire jet engines. A newcomer on the de Havilland stand is the very neat-looking Gnome derived from the General Electric T58 turboshaft unit developed in the United States. The Gipsy Major 215 has a turbo-supercharger which is available if required to increase sea level output of the engine to 220 b.h.p. Further development to 250 b.h.p. is planned. D. Napier and Rolls-Royce are both well represented in the flying display and



The de Havilland Comet 4 resplendent in B.O.A.C. colours; the Bristol 192 twin-rotor helicopter with two Napier Gazelle free turbines and, right, the Comet 3B coming into land and demonstrate thrust reversal

ness is, indeed, almost uncanny—and while the engines are more noticeable in the after part of the tourist accommodation they still resemble little more than a persistent rumbling. The smoothness of the machine in flight is exemplary and although, right from the Comet 1, one has become used to its remarkable rate of climb and short take-off and landing runs, it is all the more satisfactory to note them again at a time when such features of jet aircraft operation are much in the news. Another development in this field is

Its performance at Farnborough is certainly sprightly. Cruising at 115 m.p.h. it is one of the quietest helicopters we have heard and it shares the usual versatile characteristics of this type of aircraft. The repertoire of the Scottish Aviation Twin Pioneer has by now been more or less exhausted but that does not detract from the impressive manner in which it takes off and lands in a matter more of feet than yards. Much of the Short Brothers and Harland capacity is devoted to production of Bristol Britannias but the firm is



The standard B.O.A.C. décor in the Comet 4 and, right, the Napier Eland N.E1 6 for installation in the Canadair CL 66 includes an air turbine starter

the use of reverse thrust on landing. This will be incorporated in the 4Bs ordered by British European Airways and the Comet 3, which in the past four years had assumed more and more of the characteristics of the Comet 4, has been modified again and given the 7 ft. less wingspan of the 4B. It is also being used for thrust reversal trials and is demonstrating the efficiency of this Rolls-Royce development in its display at Farnborough. Taking a quiescent part at Farnborough are the well-tried Dove and the four-engine Heron, while de Havilland Canada originated the design of the Chipmunk, which this year demonstrates agricultural spraying, and builds the Beaver, the Series 2 version of which with Alvis Leonides

also closely concerned with research aircraft. The latest of these is the SC1 built to Ministry of Supply contract. The aircraft's maiden flight—for which it used normal forward take-off technique—was in April, 1957, and it made its first vertical take-off, while tethered in a test gantry, on May 26, 1958. The next stage in the development programme will be full-scale hovering trials in the gantry. For these trials a cable system, incorporated in the superstructure of the gantry, will be used to provide a safety envelope for the hovering aircraft. The cable system does not in any way assist or support the SC1 but is provided solely as a safety measure. Gantry hovering trials will be followed by free vertical take-off and



The Vickers Viscount 812; a close view of the Westland Westminster crane-transporter; the Fairey Rotodyne, and the Rolls-Royce Tyne installation on the Airspeed Ambassador

180,000 lb. and cruising speed 357 m.p.h.

The Bristol 173 twin-rotor helicopter with its somewhat staid cavortings has this year been replaced by the 192 military machine on order for the R.A.F. This is equipped with two Napier Gazelle free turbines. These normally drive one rotor each, but a synchronising shaft connecting the two drives makes it possible for one to drive both to maintain single-engine flight. The impressive demonstration given by this aircraft includes a landing whereafter one engine is blanked off and it then takes off on the other and returns to its appropriate resting place. As a military machine it can carry either 6,000 lb. of freight or 22 passengers and its cruising speed is almost 140 m.p.h. The Bristol 171 helicopter, or Sycamore, is a machine that has been built in quantity, mostly for military service, and one is shown in the static park.

It has already been announced that the British Overseas Airways Corporation expects to operate de Havilland Comet 4s across the North Atlantic this year and its whole fleet of 19 should have been delivered by the end of 1959. The need for the

engine also takes part in the flying display. As the senior participant in the Aircraft Manufacturing Co., Limited, de Havilland has on its stand a model of the DH121 with three Rolls-Royce RB141 by-pass jet engines which is to be built for British European Airways and another model appears on the Hunting Aircraft stand. The third partner in the project is, of course, Fairey Aviation which this year flies one of the most interesting new aircraft in the Rotodyne. This was most recently described in our issue of June 14 and it must suffice here to say that the reduction of the noise from the tip jet engines of the rotor seems certainly to have been lessened while it is certainly quiet when flying on its two Napier Elands.

#### Handley Page Projects

On its civil production side Handley Page is unfortunately confined to models owing to a mishap to the Dart Herald just before Farnborough. Apart from the development of this aircraft the company has recently announced two particularly interesting projects. One is the HP111

later by conversion to forward flight. The second SC1 is on show in the static aircraft park.

#### Viscounts and Helicopters

Vickers-Armstrongs exhibited a Viscount 812 of Continental Air Lines which also took part in the flying display. The 15 aircraft for Continental have interior cabin styling by Charles Butler Associates of New York and London and almost a score of different furnishings and trim fabrics and materials predominantly in shades of blue, rose and gold have been combined to form an interior which will appeal to Americans. It accommodates 52 passengers in a first-class four-abreast layout, with 44 in the main saloon. Forward of this are two toilets in the plane of the propeller discs and a saloon for eight passengers. Hydraulically-operated integral air steps are fitted at the forward passenger entrance door and carry-on baggage stowage is provided. In the 812 a rear lounge to seat four takes the place of the rear baggage compartment. These seats are cleared for use during take-off and landing enabling 56

also in the selection of power units on their respective stands.

Reference to equipment and other stands must perforce be brief and omission of mention should not be taken as indicating lack of anything of interest. Contrariwise the difficulty is to do justice to the many items displayed. Of interest considerably beyond aviation is a new electrical device designed to protect packaged stores by detecting moisture before damage can be caused. It is being developed by Export Packing Service, Limited, and E.M.I. Electronics, Limited, and enables the relative humidity inside a package to be tested without the necessity of visual observation through a transparent panel, as in conventional methods. The system consists of a sensitive element—fitted in each package—and a portable instrument used to carry out checks during periodic inspections.

The difficulties of permanently recording and projecting information presented on a cathode ray tube have been solved by a rapid processing photographic projector produced by Kelvin and Hughes.

(Continued on page 12)



## COMMERCIAL VEHICLE TEST

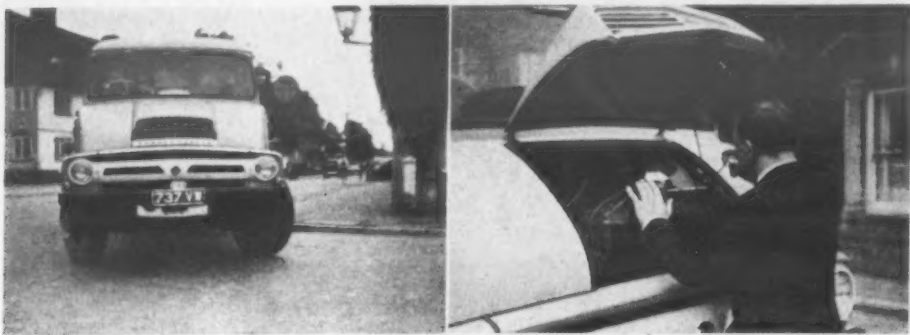
## Thames Trader L.W.B. 7-Ton Diesel Lorry\*

## A HARD WORKER ECONOMICAL TO OPERATE

**O**UTSTANDING value for money both in vehicles themselves and in after-sales service has always been the cornerstone of the policy on commercial vehicles of the Ford Motor Co., Limited, and in the Thames Trader range this policy appears to have realised its ultimate expression. The example we recently tested, the largest of the range, showed itself to be a sound and easily manageable vehicle capable of economical hard work, with several points of design to make easier the work of both the driver and mechanic in evidence, and the basic price of

a 30 ft. by 8 ft. single-deck body.

The goods vehicles have flat-topped chassis frames that extend the full length of the body and take a standard pressed-steel cab on flexible mountings. The cab front is swept back from the grille to windscreen level, which has provided space for a short outside hinged bonnet through which the necessary daily checks can be made more quickly and usually in a better light than is possible from inside the cab. The design also brings the large one-piece curved windscreen close to the driver, giving really excellent visibility.



A turning circle of about 50 ft. on the wheeltrack enables the l.w.b. Trader to be kept to its own side of the road on sharp corners; right, daily servicing is carried out quickly from the shop floor through the short bonnet

this diesel-engined 7-ton chassis complete with cab and 16 ft. 6 in. dropside body is only £1,295.

With the introduction of the Trader range, the Ford company moved away from the bonneted layout and torque-tube drive, which had been features of its successful medium-capacity commercial vehicles for so many years, and adopted the now practically standard British arrangement of Hotchkiss open shaft drive and forward control, with its advantages of greater manoeuvrability and lower overall length for a given load space. The Trader also brought the company into the popular two-axle 7-ton capacity class for the first time.

## Plus a Little Something...

Characteristically, a close study of the market resulted in the development of a design that obviated or reduced some of the minor disadvantages of the forward-control layout, with a number of wheelbase, power unit, frame strength and axle ratio variations available that could be permuted to meet the widest range of operator requirements, yet which would fit into a quantity-production programme and enable prices to be kept to a minimum. The Thames Trader range covers load capacities from 1½ to 7 tons and there are 4½, 5 and 6 cu. yd. tippers, articulated tractors and a passenger chassis based on the 7-ton units to take

Disposition of the axles has been planned to give correct weight distribution when the body is sensibly loaded and reasonably short wheelbases to make for easy handling in congested conditions. The long seven-tonner, for example, takes a 16 ft. 6 in. body on a wheelbase of 13 ft. 4 in. and during our test we found it would turn in a 50-ft. circle measured at the wheeltrack and required a 54-ft. space to clear the sweep of the wings. In the fully laden condition as tested, with seven tons of weights disposed evenly over the body floor, a weighbridge check showed the gross weight to be 10 tons 7 cwt. with the crew dismounted, of which 3 tons 3 cwt. was borne by the front axle. With a crew aboard the weight distribution could obviously hardly be better.

## Insulated Cab

The cab is of welded steel construction and has an insulated lining. The short quick-release inside engine cover is double skinned and interlined with glass fibre and there are rubber mats on the floor, all contributing to provide a remarkably quiet ride. Ventilation is obtained through two adjustable vents in the cab sides and a fresh-air intake behind the grille for the optional cab heater-demister in conjunction with full-drop windows in the doors. Cab appointments include a passenger seat just wide enough for two adults of average size (though with rather limited width for legs) and a central

instrument-control panel with a commendably large and clearly calibrated speedometer. The seats are well-shaped, comfortably upholstered and covered with colourful but hardwearing material and the driver's seat would be perfect if it was adjustable for height as well as fore and aft—we found it impossible to assume the more efficient ten-to-two hold on the rather high steering wheel and had to drive with hands on the bottom of the wheel rim.

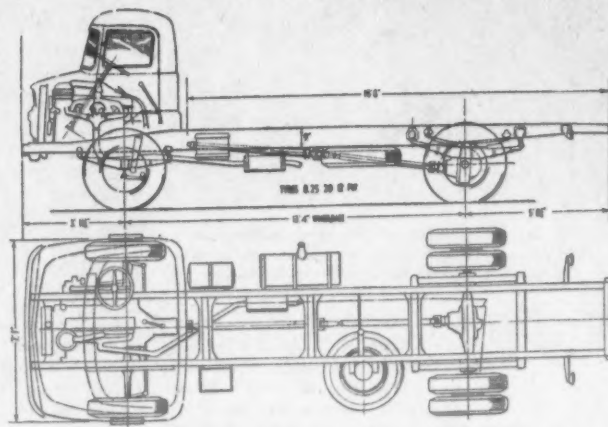
Otherwise the controls were all conveniently placed (the excess fuel knob by the driver's left foot much too conveniently for the misguided driver) and we found the sturdy shortish gear lever very efficient in use. The twin vacuum-operated windscreen wipers were also very efficient, taking their power from the large vacuum reservoir fitted with the diesel engine and the variable-speed control was satisfying, but we doubt whether we should have been as pleased with their performance in a petrol-engined vehicle without the large reservoir. Engine start and stop controls are very handy on the floor behind the engine cover, and lighting, horn and direction-indicator switches are arranged for finger-tip operation under the steering wheel.

## Willing 6D

We described the Thames Trader in detail in our issue of May 25, 1957, when the new range was announced. Briefly, the seven-tonner is

wheelbase chassis. Standard tyres are 8.25-20 12-ply and vacuum-assisted hydraulic brakes provide a total lining area of 436 sq. in.

The 6D diesel engine follows closely the design of the extremely successful direct-injection 4D. It has a bore of 3.94 in. and stroke of 4.52 in., giving



Layout and principal dimensions of the Thames Trader long-wheelbase seven-tonner

a capacity of 330 cu. in. (5.416 litres), from which it develops 100 b.h.p. at 2,500 r.p.m. and 242 lb./ft. torque at 1,500 r.p.m. Like the four-cylinder engine, the 6D develops good low-speed torque and even with the higher of the two axle ratios offered—6.8 to 1 and 7.2 to 1—provided a

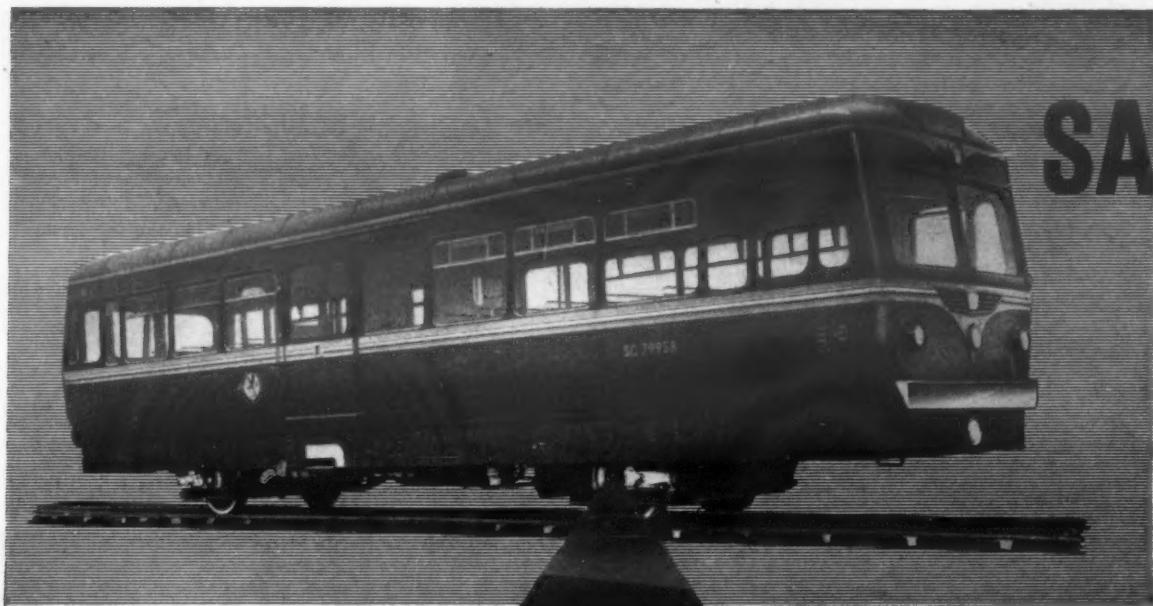
## TEST RESULTS AT A GLANCE

Vehicle Details	Test Results
<p>MAKER: Ford Motor Co., Limited, Dagenham, Essex.</p> <p>TYPE: Thames Trader l.w.b. 7-ton diesel dropside lorry.</p> <p>ENGINE: Ford 6D six-cylinder direct-injection diesel; bore 3.94 in. (100 mm.), stroke 4.52 in. (115 mm.), capacity 330 cu. in. (5.416 litres); compression ratio 16 to 1; 100 b.h.p. at 2,500 r.p.m., 242 lb./ft. torque at 1,500 r.p.m.</p> <p>TRANSMISSION: Clutch, hydraulically operated semi-centrifugal single dryplate, 12 in. (304.8 mm.) diameter, 141.4 sq. in. (913 sq. cm.) total lining area; gearbox, four-speed synchromesh (except first), ratios 6.38, 3.092, 1.686 and 1 to 1 forward, 7.82 to 1 reverse; driveshaft, two-piece open tubular shaft with needle roller bearing universal joints and centre bearing; rear axle, pressed-steel banjo with hypoid gears and fully floating half shafts, ratio 6.8 to 1 (7.2 to 1 alternative).</p> <p>BRAKES: Vacuum-assisted hydraulic two-leading-shoe, total lining area 436 sq. in. (2,713 sq. cm.).</p> <p>TYRES: 8.25-20 12-ply, twin rear, standard, others available optionally.</p> <p>WHEELBASE: 13 ft. 4 in. (4.064 m.).</p> <p>WEIGHT: Chassis-cab in licensing order 2 tons 13 cwt. (2,698.5 kg.), dropside lorry in kerb trim 3 tons 64 cwt. (3,378 kg.).</p> <p>PRICE: Diesel-engined chassis-cab £1,185, dropside lorry complete in primer £1,295, plus £247 5s. 9d. British purchase tax in each case.</p>	<p>ROUTE: MODERN TRANSPORT standard route in Kent and Surrey.</p> <p>CONDITIONS: Cloudy and close with some rain.</p> <p>RUNNING WEIGHT: 10 tons 7 cwt. (10,516 kg.) plus crew of two.</p> <p>PAYLOAD: 7 tons 04 cwt. (7,137 kg.).</p> <p>FUEL CONSUMPTION: For 15 miles continuous running 15.5 m.p.g. (5.9 km./litre) at 28.3 (45.3 k.p.h.) average speed.</p> <p>GROSS TON/M.P.G.: 162.7 (58.5 tn./km./litre).</p> <p>PAYLOAD TON/M.P.G.: 109 (39.2 tn./km./litre).</p> <p>MAXIMUM GRADIENT CLIMBED: 1 in 41 (21 per cent).</p> <p>TURNING CIRCLE: Wheeltrack 50 ft. (15.2 m.), sweep 54 ft. (16.5 m.).</p> <p>ADJUSTMENTS DURING TEST: None.</p> <p>ACCELERATION:</p> <p>Averages of four runs, through gears:</p> <p>0-20 m.p.h. 12.5 sec.</p> <p>0-30 m.p.h. 27.5 sec.</p> <p>in direct drive:</p> <p>10-20 m.p.h. 16 sec.</p> <p>10-30 m.p.h. 32 sec.</p> <p>BRAKING: Average of several measured emergency stops from 30 m.p.h. 54 ft. equivalent to 18 ft. per sec. per sec. or 0.56 g. overall retardation; Tapley meter 73.85 per cent. Handbrake from about 20 m.p.h. 33.38 per cent Tapley meter. ESTIMATED TOP SPEED: 46-47 m.p.h. (73-75 k.p.h.).</p> <p>OVERALL FUEL CONSUMPTION: For 66 miles of mainly hard driving, including numerous stops and low-gear work in hill-climbing, acceleration and braking tests, 12.4 m.p.g. (440 km. per 100 litres).</p>

offered with the Ford six-cylinder diesel or petrol engine driving through a centrifugally assisted clutch with hydraulic operation, a four-speed gearbox with synchromesh on second, third and fourth gears, a two-piece open propeller shaft and fully floating hypoid rear axle. Suspension is by synchronised semi-elliptic leaf springs, with helper springs at the rear and standard shock absorbers at the front. Dampers are also standard at the rear on tippers but an optional extra on the longer-

very lively performance for a 7-tonner, accelerating from rest to 20 m.p.h. in an average time of 12½ seconds and to 30 m.p.h. in 27½ sec. This axle ratio should not be too high for most operations even in moderately hilly districts, as the vehicle showed no sign of being over-gear on our hilly route and got away easily in first gear on a 1 in 41 gradient. On vehicles operated most of the time well loaded and in hilly country, the 7.2 to 1 axle

(Continued on page 10)

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Basically the brake is similar to the well-known aircraft and motor-car Dunlop disc brake from which it has been developed. Friction pads are applied hydraulically to both sides of a disc, attached externally to each rail wheel. As the brake is applied a monitor or sensing shoe coupled to a beam comes into contact with the wheel tread. The movement of the beam regulates the pressure to the brakes so that the maximum safe braking torque for all track conditions is automatically applied.

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# RAILWAY FREIGHT HANDLING

## European Trends Seen at Brussels

INTERESTING trends in railway freight handling on the Continent are reflected in the display of wagons, containers and road-rail devices shown in the railway rolling stock park behind the Transport Pavilion at the Brussels Exhibition. The greatly increased tempo of competition with road transport is evident in the production of additional ingenious door-to-door transport equipment and the readiness with which specialised types of wagons are being made available; at the same time the railways are eager to share in the development of private motoring by provision of attractive facilities by which new cars can be delivered by rail or motorists can put car and passengers on board a train to avoid a tedious run through uninteresting or industrial terrain.

### Conveying Cars

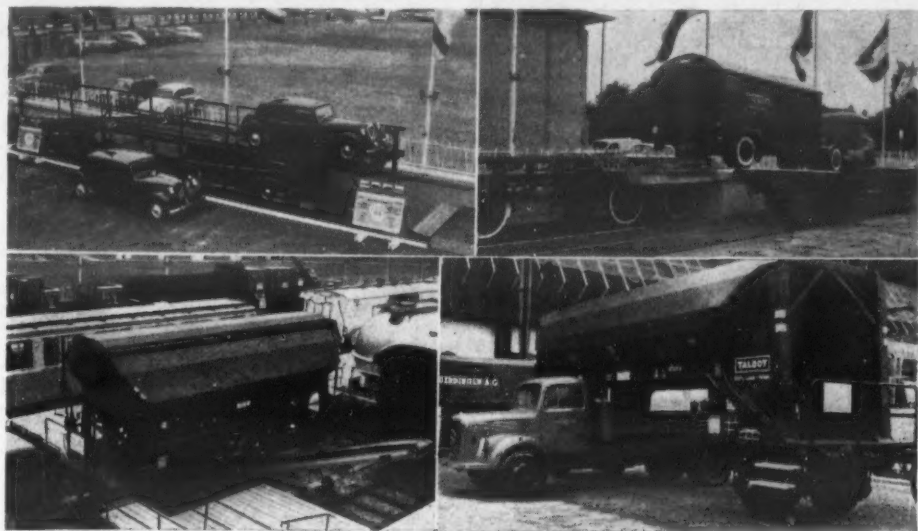
The German Federal Railways show a 42-ton covered van on two levels essentially designed for the transport of accompanied cars. It is

32 ft. 9 in., an 11-ton tare, and is rated for a 27½-ton load. The space inside, because of higher sides, is 2,118 cu. ft.

### Hopper Wagons

A hopper wagon by Waggonfabrik Talbot with a roof opening down the length of the wagon and moving out to each side by a movement like the Flip-Flap at the old White City, is also in experimental service with the German railways for traffic such as cement which is subject to damage by wet. On four wheels, it provides a load capacity of 28 tons for a tare of 12; the space available for the load is 1,130 cu. ft. The overall length is just on 30 ft.

Another remarkable German wagon by Talbot is the portal or gantry type wagon. The 1,130-cu. ft. hopper in this case is raised sufficiently to enable a lorry to be passed under the hopper for gravity discharge of coal, iron ore or other bulk commodity. It is also useful for the insertion of a



French double-deck wagon for motor-car traffic; road trailer about to be backed on to railway wagons for transport on U.F.R. system, for which a bridge wagon is provided by the buffer stops; below, longitudinally closed roof on German hopper wagon; gantry-type hopper wagon inside German loading gauge able to discharge load into lorry backed in below hopper

87 ft. 10½ in. long, and has a platform area of 926 sq. ft. Built by Wegmann, the apparatus is designed with considerable ingenuity so that a pivoting platform provides a way in for the car from an ordinary station platform and can then place it on either level. The French Railways showed a two-deck wagon which offers the same facilities in a rather less elaborate manner; it requires end-loading, however, with a considerable amount of work in placing and removing ramps, and no doubt it cannot equal the loading time of eight minutes claimed for the German vehicle. The S.N.C.F. wagon is the production of Société Nouvelle des Ateliers de Venissieux, and carries the cars virtually in the open. There are two lengths, 50 ft. 9½ in. and 57 ft. 0½ in., and the tare weights are only 12½ tons or 13½ tons. The length on the two levels (reached by winch-operated ramps) is either 95 ft. 5½ in. or 107 ft. 11½ in., according to the overall length of the wagon and the capacity is for 5 or 8 cars according to the size. This wagon is not only used in car sleepers but for car delivery work. It is limited to 60 m.p.h. running, whereas the German van is passed for high-speed passenger service at up to 87 m.p.h.

The French and German railways each have on view wagons which, while of open wagon type, do not require sheeting. The S.N.C.F. wagon has a MacGregor sectioned cover, which can be wound back to its rack on one end in three minutes, either from platform or track. The wagon is a four-wheeler with a tare of about 12 tons, built by Boillot-Pétolat; the cover is manufactured by MacGregor-Comarain. The overall length is 34 ft. 5½ in., the net loading space 1,430 cu. ft., and the load capacity 28 tons. The Bundesbahn wagon, built by Siegner Eisenbahnbedarf, has sliding sides and roof; it has an overall length of

portable conveyor belt below the wagon. Only 33 ft. 9½ in. in overall length, the wagon is designed for a 27-ton load. Its tare is about 12½ tons.

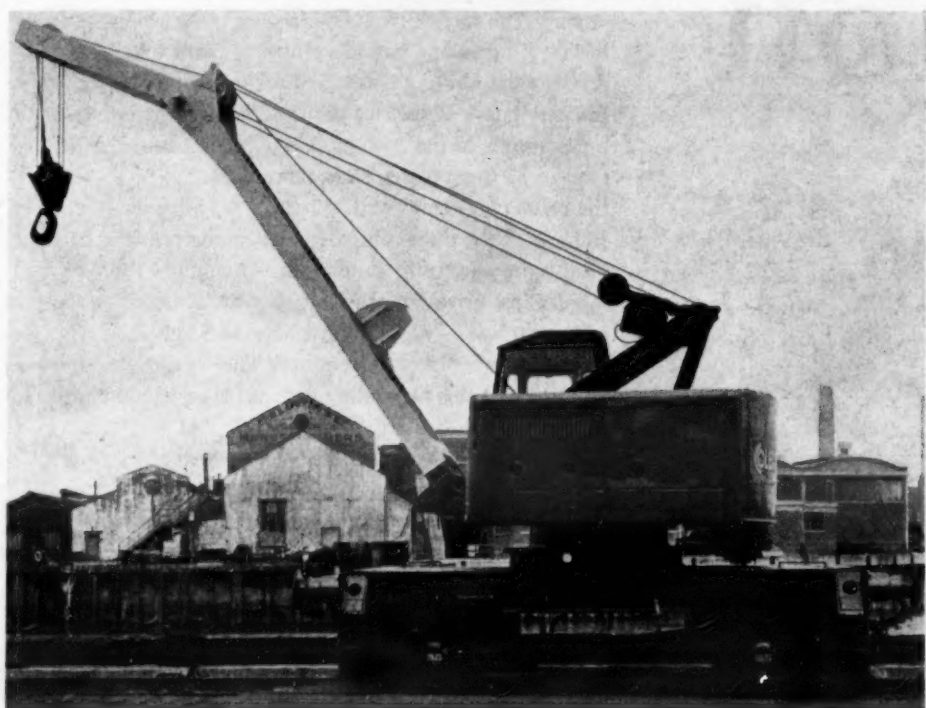
A good deal of thought has been devoted by the Germans to various methods of tipping wagons and another remarkable vehicle is the Hubkipper (a product of the Siegner Eisenbahnbedarf), which has hydraulic rams capable of lifting the body four feet before the tipping is effected. Despite the construction the tare is 12½ tons for a 26-ton load. Another unconventional tipping vehicle emanates from Orenstein-Koppel und Lübecker Maschinenbau; it is carried between two bogies and has an overall length of 54 ft. 9½ in. The tare is 20 tons, but the body takes a 51-ton load; it is capable of being lifted off the bogies and can be dropped down an inclined plane on a trolley to be used as an amphibious container for canal transport.

### Door-to-Door Transport

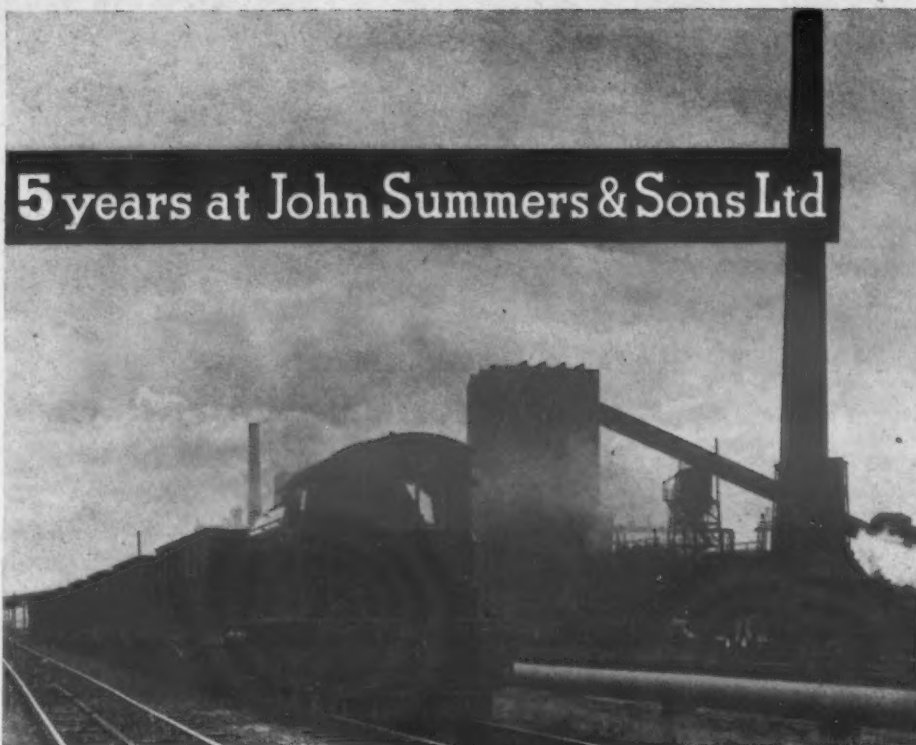
In door-to-door transport road-rail vehicles include the Schöttler and the Uerdingen systems. In the former the axle and buffer beam assemblies are added to a road trailer on the point of change-over to the rail, while the road trailer cum railway wagon is partly supported on jacks; in the latter the flanged railway wheels carry pneumatic tyre wheels on the outside and the twin back axles of the road trailer merely need re-spacing to suit its metamorphosis into a railway wagon. The buffers and couplings are permanently carried on the vehicle. Neither of these solutions would appear to meet the stringent British loading gauge.

The piggyback system, so easy under U.S.A. loading gauge conditions and initiated many years ago on the L.M.S.R. in Britain with Dyson mill

(Continued on page 13)



The Eastern Region of British Railways has ordered 13 of the Coles R12105 rail-mounted diesel-electric crane, able to run in piped trains at up to 45 m.p.h. These cranes will replace 42 manually-operated units. The driver has all-round vision, can look into a high-sided open truck from his cab and has a visual radius indicator. A driver and slinger replace a gang of four to six men on manual cranes



## 5 years at John Summers & Sons Ltd

Paxman engined locomotives first entered service at the Hawarden Bridge Steelworks of John Summers & Sons Ltd., in 1953. Of their present fleet, seven locomotives (diesel-electric, diesel-mechanical and diesel-hydraulic) are powered by Paxman.



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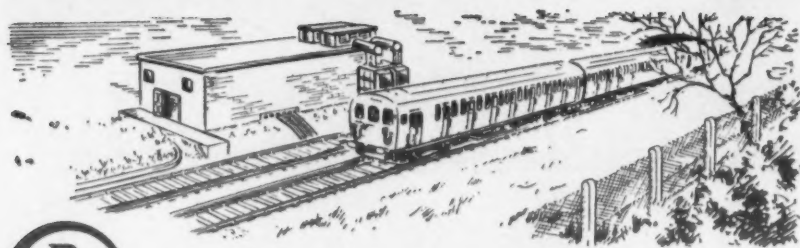
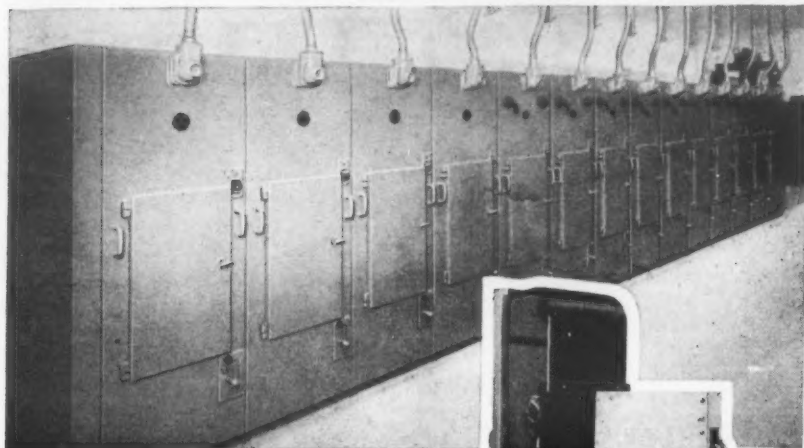


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## NEWS FROM ALL QUARTERS

Electric Equipment  
for British Railways

BTH HIGH-SPEED CIRCUIT-BREAKERS installed at Hither Green substation.

In the D.C. network associated with the Southern Region change of frequency scheme, seven-hundred-and-eighteen of these units—for rectifier, feeder, and paralleling duties—are being installed in over eighty rail-side substations and paralleling huts.

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## Passenger Train Services to be Withdrawn

The London Midland Region is to withdraw passenger train service between Leamington Spa and Weedon on and from September 15. The stations affected are Weedon, Daventry, Braunston (London Road), Napton and Stockton, and Southam and Long Itchington.

## Glasgow Tram Tour

Tomorrow (September 7), the Railway Enthusiasts Club has organised a tour of the Glasgow Corporation tramways by special car. It will leave St. Vincent Street at 9.30 a.m. and will embrace Rouken Glen, Mosspark, Blairdardie, Yoker, Maryhill and Millerston, together with visits to Coplawhill works and Newlands depot. The fare, 5s., may be paid on boarding the tram.

## Swiss Tramway to Close

The government of the Swiss canton of Schaffhausen has issued a long-awaited report on the Schaffhausen-Schleitheim-Oberwiesen tramway in which it states that the system is in such a bad condition that it would be cheaper by half to scrap the present trams and convert to bus operation than it would be to modernise the service. Much of the rolling stock, like the line, is 50 years old.

## Tourist Boom Continued in June

June was another record month for Britain's tourist industry. Figures released by the British Travel and Holidays Association show that 155,500 tourists arrived in this country during the month—10 per cent more than in June last year. There was an increase of 24 per cent in the number of visitors from the United States—53,300 against 43,000 in June, 1957. Visitors from South America increased by 36 per cent over last year.

## "Sapper" Rail Tour

Hauled by a class T9 4-4-0 locomotive, a special train organised by the Railway Correspondence and Travel Society will leave Waterloo at 2.09 p.m. on Saturday, October 4, and traverse the route Epsom, Eppingham, and Guildford to Liss; thence via the connecting spur to the Longmoor Military Railway, proceeding via Longmoor and the Hollywater loop line to Bordon. From there the return to Waterloo will be via the Bentley branch to Aldershot and Woking.

## French Electrification Extended

Electrification of the 65 miles of main line of French Railways between Lyon and Valence to the south will be completed by the middle of this month. On and from September 28, when winter timetables are introduced, all express trains running between Paris and Valence (383 miles) will be electrically hauled between those two points, including those to Marseille and the Riviera. After the electrification of the Longueau-Creil section, which should be completed in November next, to be followed by that of the Creil-Paris section in December, it is anticipated that the official inauguration of throughout electric traction on the Lille-Paris line will take place during the first days of January, 1959.

## Bananas to Northern Ireland

For the first time, bananas for Northern Ireland passed via Heysham when, on Tuesday this week, 25 container loads left for Belfast on the new British Railways ship *Container Enterprise*.

## Southern Region Stations Renamed

Two Southern Region stations are to change their names on September 15. Boxhill and Burford Bridge Station will be renamed Boxhill and West Humble, and Woodbury Road Station (near Exeter) becomes Exton.

## Brussels Chair-Lift for Blackpool

Blackpool Corporation is to purchase the 2½-mile long chair-lift now operating at the Brussels Exhibition and re-erect it on the promenade between the North Pier and the Pleasure Beach south of the town. The chair-lift, capable of transporting about 800 people an hour, has 25 two-seater "chairs" spaced at intervals of 20 ft. along a continuous moving cable and is in three sections. The total cost of erecting it at Blackpool is estimated at £150,000.

## U.T.A. Freight Rates Up

Because of rising costs, particularly those related to wages and National Insurance contributions, the Ulster Transport Authority will increase its road and rail freight rates and charges by approximately five per cent from September 8. In December, 1956, after an inquiry, the Transport Tribunal for Northern Ireland fixed the Authority's rates and charges at a level 15 per cent above the then existing maximum charges. The U.T.A. used 10 per cent and is now applying the balance.

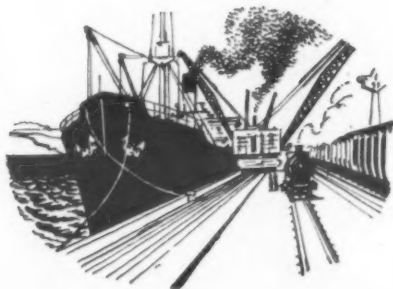
## Glasgow Traffic Census

Last week a comprehensive traffic census was organised in the central area of Glasgow, using about 400 observers recruited for the purpose. Cars were not stopped, but direction of travel was noted, using registration plates as identification. The object was to determine a suitable inner ring road to relieve congestion in the city centre. Restrictions on the parking of cars in this area are scheduled to commence at the end of this month. It has been estimated that there are 3,500 all-day parkers. About 70 perimeter parking places have been set aside.

## First All-Diesel Depot on L.M.R.

When locomotive No. 47517 left Devons Road (Bow) motive power depot in East London on August 25 for the last time, it marked the end of the steam era there for it was the last of the 41 steam engines previously stabled at the depot. These engines have now all been replaced by 31 diesel locomotives and Devons Road thus becomes the first British Railways London Midland depot to go over entirely from steam to diesel traction. The diesel newcomers comprise 13 mixed traffic locomotives of 1,000 h.p., 10 mixed traffic of 800 h.p., and eight shunters of 330 h.p. The depot provides locomotives for freight train working between London docks and Willesden and Acton over the former North London Railway lines and London dock lines. The services worked are largely movement of inter-regional traffic.

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## COMMERCIAL AVIATION

### Cambrian Retrenchment

#### SINGAPORE AIRPORT

IT was announced last week by Cambrian Airways that it was reducing the scale of its operations "to a size consistent with established and estimated public demand." Traffic this year had failed to reach expected levels, due to pockets of unemployment, shortage of overtime and general bad weather. The exact scale of these reductions was not yet known but marginal routes would be most affected. All routes at present operated would continue to be served until the end of the summer schedules on October 25. The reductions meant that three Heron airliners, bought originally for marginal route development, would no longer be required, and would be sold. Some redundancies in staff would result from the proposed changes. British European Airways hold a third of the share capital in Cambrian Airways.

#### Ceylon to China Service

The Air Ceylon service now operating between Colombo and Singapore is shortly to be extended to Canton via Hong Kong and landing rights are now under negotiation. The new service is expected to be a weekly operation with Super-Constellations.

#### New T.W.A. Cargo Facilities

Trans World Airlines will now accept air freight in London for shipment the same night across the Atlantic up until 5.30 p.m. on Mondays to Fridays at the airline's cargo office, 25 Duke Street, W.1. This represents an extension of some 1½ hours over the previous latest acceptance time.

#### Real Aerovias Nacional Joins I.A.T.A.

Real Aerovias Nacional, a Brazilian international carrier, with headquarters at Sao Paulo, has become an active member of the International Air Transport Association. Real operates scheduled services between Brazil and the United States, as well as to other points in South and Central America.

#### B.O.A.C. Flies Guards Bands

More than 90 members of the Brigade of Guards will fly to America by B.O.A.C. Britannia on September 9 for a three months' tour of the U.S.A. and Canada. They are members of the band of the Grenadier Guards and the pipers and Highland dancers of the Scots Guards. The bandmen will travel in a Britannia 312 from London to Hartford, Connecticut.

#### New Roadair Service

A thrice-weekly Roadair freight service between London and Lille was recently inaugurated by Silver City Airways. Its introduction was particularly unusual because it at once became necessary to augment the planned frequency. As in the case of the well-established Paris service the basis of the new Roadair facility is that Silver City Airways arranges through road and air transport between the two cities in an elapsed time, including Customs clearance, of between three and four days. The air sector is operated by Bristol Superfreighters between Lydd and Le Touquet. The majority of freight is expected to originate in the Lille area—in the form of textile materials and products—and for this reason there are three inbound services and only two outbound schedules weekly.

#### Marine Terminal at Prestwick?

The possibility of providing a marine terminal at Prestwick (Ayrshire) is being considered by members of the Scottish Advisory Council on Civil Aviation. Such a terminal, Sir Patrick Dollan, chairman of the council, said, would cater largely for the traffic between Scotland and Ireland, and would also be able to take larger vessels and so relieve some of the shipping congestion on the Clyde. Sir Patrick and other members of the council recently visited the new airport at Gatwick. He said that certain features of the airport could well be included in the extension plans for Prestwick and Renfrew. The council was considering the possibility of direct flights from Renfrew to Gatwick so that travellers could then go by train to Brighton, Bournemouth and other holiday resorts on the south coast.

#### Singapore Airport Building

Doubts about the future of the Singapore international airport have been cleared up and the government is to go ahead with its development. Mr. Francis Thomas, the colony's Minister for Communications and Works, recently told the Legislative Assembly that a new operational control centre would be ready by 1960, when it was thought the present control system would become inadequate for traffic needs. The work now to go forward was erection of a new control tower which would be 120 ft. high, plus a seven-storey operations building with more than 40,000 sq. ft. of floor space. This would house the area joint air traffic control centre, the area communications centre, the air information centre, a military air movement centre and the main aviation meteorological office in South-East Asia. Mr. Thomas said the proportion of transit passengers who stayed in Singapore for an hour or two was about 15 per cent of the total. The other 85 per cent stopped over for varying periods.

#### Coral Route to Continue

The New Zealand Government has decided to continue the Coral Route flying-boat service to a number of Pacific islands. The route is at present operated by Tasman Empire Airways between Fiji, Western Samoa, the Cook Islands and Tahiti. It was announced some weeks ago that the route would be discontinued. The Minister in Charge of Civil Aviation, Mr. John Mathison, said that the decision to continue the service had been made possible by arrangement with T.E.A.L., on behalf of the Civil Aviation Administration, to repair and replace navigational and communication radio facilities at Aitutaki, in the Cook Islands, and Western Samoa. The administration staff is at present fully engaged on essential installations at Nandi (Fiji) and Rongotai. Expenditure for the work has now been authorised. Although the Solent flying-boat was being withdrawn from the service for a routine overhaul, the company had chartered a Sandringham flying-boat to maintain the Coral Route until the Solent was again available. The Sandringham had less capacity than the Solent, and because of load restrictions, some temporary interruption to normal schedules was possible until the Solent resumed the run. The present decision would enable the best use to be made of the two years available before the final withdrawal of the Solent flying-boat for development of plans for a landplane service.

## PRESIDENT OF THE S.B.A.C.



*A. F. Burke*

Mr. A. F. BURKE, O.B.E., M.Inst.T., F.R.S.A.

• • • • •

President of the Society of British Aircraft Constructors which, this week, has been holding its annual flying display and exhibition at Farnborough, Mr. Aubrey Francis Burke has also, as deputy chairman and managing director of the de Havilland Aircraft Co., Limited, had the satisfaction of seeing the Comet 4 jet air liner for B.O.A.C. make its first appearance at this event. Furthermore the 3B, as precursor of the 4B on order for B.E.A., also takes part in the display. Born on April 21, 1904, Mr. Burke commenced a five-year engineering apprenticeship with Tyson's, general engineers, of York, in 1922, and thereafter joined Vickers, Limited, where he was engaged on airship construction from 1927 to 1931 and participated in the transatlantic flight of the R100. In 1933 he joined Airwork, Limited, as works manager and two years later went to Imperial Airways; there he spent the next four years on the co-ordination of the Empire Air Mail Scheme. Upon the formation of the British Overseas Airways Corporation he was transferred as superintendent of technical development but, in 1940, he was loaned to the Ministry of Aircraft Production for special duties, including the Aircraft Civilian Repair Organisation. He served as technical liaison officer and deputy managing director of D. Napier and Son, Limited, and returned to B.O.A.C. as assistant director-general (technical) in 1943. Mr. Burke joined the de Havilland Enterprise in 1944 when he became director and general manager of the de Havilland Engine Co., Limited. He is now chairman of that company, deputy chairman of de Havilland Holdings, Limited, managing director of the Aircraft Manufacturing Co., Limited—the company set up in conjunction with the Fairey Aviation Co., Limited, and Hunting Aircraft, Limited, to produce the DH121—and a director of de Havilland Aircraft, Inc. in the United States. He has been a member of council of the Society of British Aircraft Constructors since 1946 and is a member of the Institute of Transport.

## PASSENGER FARES

### B.T.C. Submits Scheme

#### MAXIMA SET OUT

THE new passenger charges scheme proposed by the British Transport Commission and submitted to the Transport Tribunal on September 1, sets out maximum permissible levels of fares, in accordance with principles set out in the 1953 Transport Act. There is no immediate intention of applying the increased fares. With minor exceptions, the ordinary passenger fare on British Railways outside the London area has been at the rate of 2d. a mile second class since September 15, 1957, when the rate was raised from 1.88d. a mile. It may be noted that the Transport Tribunal approved the rate of 2d. a mile from January 1, 1953, but the rate was not applied until a year ago. Authority is now being sought to fix the maximum permissible rate at 3d. a mile second class and at 4½d. first class.

There are, however, no proposals at this time to make any general use of this margin of flexibility. About half of all ordinary travel is, in any case, made at concession rates (e.g. mid-week and day returns) which have been introduced for commercial reasons, these fares will continue to be fixed on a commercial basis.

#### Continental Boat Trains

Proposed maximum charges for Continental boat trains between London and Folkestone or Dover are shown in the seventh schedule to the scheme. The special fares for these services have been covered by statutory authority for many years prior to nationalisation, and afford some compensation for the high cost of providing all-the-year-round Continental services. The new ceiling figure sought is 38s. first class, 25s. 4d. second from London to Folkestone Harbour and 39s. 6d. and 26s. 4d. respectively from London to Dover Marine.

At present the Commission is obliged to charge reduced fares for early morning travel (i.e. a journey due to finish not later than 8 a.m.) between any two stations up to a distance of 60 miles. The Commission has consistently said that it regards these fares as an anachronistic survival from the days of workmen's tickets, and that they should be abolished except where there is a good commercial reason for retaining them. While the draft scheme seeks to abolish the obligation to issue early morning returns, the Commission would be free to issue them or not according to commercial and other justification.

#### Season Ticket Scales

At present there are two separate season ticket scales—one for British Railways outside London, and the other for the London Transport Executive and the London Area lines of British Railways. The scale for British Railways outside London is slightly lower than the other. In future the Commission proposes to have only one scale which will be a maximum season ticket scale, as set out in the fourth schedule to the scheme. In the case of British Railways outside London, the new maxima provide "headroom" ranging from 18 per cent at two miles to 50 per cent at 50 miles and over, and as before there is a substantial discount on travel at ordinary fares, rising to over 60 per cent at 50 miles on a 10-journey basis. These season ticket scales are maximum scales and the Commission has no intention at this time of exercising these maximum powers to the full.

#### London Transport

The proposed scales of maximum permissible charges for London Transport ordinary fares begin with existing 3d. and 5d. fares left untouched, but with a headroom of 1d. on the present 4d. rate for 1½ miles. A headroom of 1d. is proposed on fares up to 18. 10d. (11 miles) and then of various sums up to 10d. on 4s. 3d. (30 miles), 1s. 2d. on 5s. 7d. (40 miles) and 1s. 7d. on 6s. 10d. (50 miles), keeping the totals fractionally above the 2d. a mile rate. For second-class season ticket rates a headroom of 8 per cent in the London area and 18 per cent elsewhere is proposed for two miles (£1 6s. monthly rate in the maximum charges scheme); 20 miles is £5 6s. or a headroom of 25 and 28 per cent; 50 miles £10 4s. 9d. or 48 and 50 per cent respectively. The discount offered by a season ticket compared with the maximum ordinary fares for the appropriate number of journeys is 40 per cent for 40 miles on a 10-journey basis and 50 per cent on a 12-journey basis. As in the case of the proposals for British Railways outside London, the scheme does not make specific provision for early morning fares in the London area, freedom being sought to deal with such fares as may be considered commercially expedient. It is not the Commission's intention, however, to exercise these maximum powers to the full at the present time.

In addition to the proposed new maximum fares scales for London Transport, powers are being sought to round up children's fares to the next 1d. instead of charging the exact half fare as at present (this would also apply to British Railways) and to charge, on all-night bus and trolleybus routes where patronage is limited and the services are at present operated at a heavy loss, up to twice the proposed maximum fare applicable on normal services.

#### British Railways in the London Area

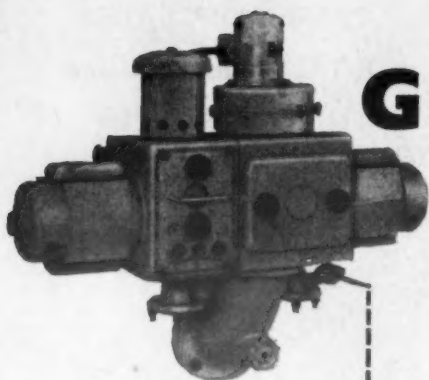
As has been provided in various charges schemes since 1950, fares on the London, Tilbury and Southend line of British Railways would be subject to the same maxima as are proposed for London Transport, and ordinary fares on other lines of British Railways in the London area would be subject to the same maxima as are proposed for railways outside London, subject as before to the provision, where cheaper, of a day return fare equal to two London Transport single fares for the same distance. Season tickets would be charged on the same scale as London Transport.

#### Special Services

The scheme proposes that the Commission may charge "such reasonable charges as it may determine" for any train or vehicle specially provided for particular passengers or purposes, trains subject to supplementary charges (e.g. trains with special amenities), and for a number of miscellaneous services, including sleeping berths; seat reservations; luggage in advance; cloakroom or left-luggage facilities; and inter-station bus services between the London termini. In order to provide headroom above the present scale, it is proposed to fix the maximum charges for excess luggage at about 25 per cent over the existing charges.

The Keswick Granite Company is to offer the 7¼-mile 1 ft. 3 in. gauge Ravensglass and Eskdale Railway for sale. It has operated in its present form since 1915.





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The Station Master or Goods Agent will keep stock records and send advices to customers on your own notepaper. They will also be glad to supply any information about these services.

### BACKING THESE SERVICES ARE

Nearly 800 express freight trains daily. The largest motor collection and delivery fleet in the country. The experience of staff who deal with more than 3 million tons of this sort of traffic annually. More than 5,000,000 sacks for hire. A readiness second to none to meet any special requirements in service and equipment which you may wish.

**BRITISH RAILWAYS**

## 800-H.P. DIESEL-ELECTRICS For Eastern Region

NEW type 1 800-h.p. diesel-electric locomotives, ten of which are on order from the North British Locomotive Co., Limited, for service in the Eastern Region, are intended for freight train working in the London area, including inter-regional services over the East London line of London Transport to Hither Green and New Cross Gate on the Southern Region, and parcels trains between Liverpool Street and Southend.

Running at the governed speed of 1,250 r.p.m., the power output is set at 800 h.p. with a specific fuel consumption of 0.375 lb. per b.h.p. hour. The main generator is a G.E.C. self-ventilated type WT 881 d.c. machine with a continuous rating of 505 kW, 1,700 amperes and 290 volts at 1,250 r.p.m.

The driver's cab is fitted with fully duplicated driver's desk, with controls and gauges for driving



North British 800-h.p. diesel-electric locomotive with Paxman engine and G.E.C. electrical equipment for Eastern Region at Stratford motive power depot

Numbered D8400-D8409, they were designed by, and are being constructed to the requirements of, the British Transport Commission under the general direction of Messrs. R. C. Bond and S. B. Warder (chief mechanical engineer and chief electrical engineer respectively of the British Railways Central Staff, B.T.C.), the detailed design and supervision of construction being the responsibility of Mr. K. J. Cook (chief mechanical and electrical engineer, Eastern and North Eastern Regions).

The diesel engine in the locomotives is the Paxman 16 YHXL pressure-charged 16-cylinder

in either direction. Straight air braking is used on the locomotives, but equipment for the vacuum brake operation of fitted stock is also provided.

The Bo-Bo wheel arrangement has been used; the maximum speed is intended to be 60 m.p.h. The maximum tractive effort which can be exerted is 42,000 lb. and the tractive effort on continuous rating is 20,000 lb. The length over buffers is 42 ft. 6 in., the overall width 8 ft. 8½ in. and the maximum height is 12 ft. 6 in. The bogie wheel-base is 8 ft. 6 in. and the bogie pivots are set at 20-ft. centres. A 3-ft. 7-in. wheel is employed. The weight in working order is 68 tons.

## Thames Trader 7-Tonner on Test

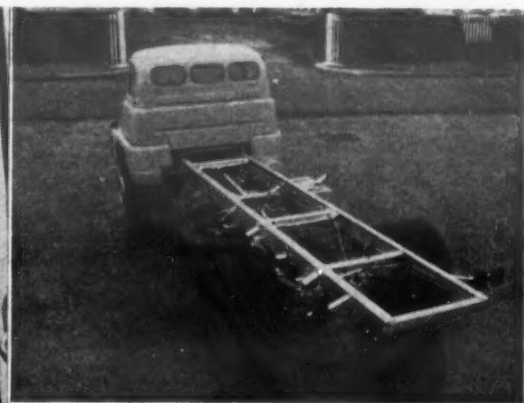
(Continued from page 6)

would obviously give the driver an easier time with the gearbox and probably result in lower fuel consumption.

### Good Synchronesh

Not that the driver need have any fear of this new synchronesh gearbox. At one time, and not so very long ago, it was necessary to be painstaking consistently to change gear cleanly in the Ford gearbox. With this one, the synchronisers worked efficiently, particularly on second and third gears, on a vehicle that had covered over 8,000 miles on demonstration work. On the other hand, the mechanism did not, as do some types of synchroniser, hinder a straight-through change from first to second on full power, which is such

stops measured with our chalk-firing magazine, in which an average stopping distance of 54 ft. and Tapley meter readings between 73 and 85 per cent were recorded, only the first was made on a completely dry road; in this a 52-ft. stop was recorded, equivalent to 18.6 ft. per sec. per sec. overall retardation, and in the subsequent stops in the series on roads made wet by rain the distance was greater by only a few feet. After our usual ¼-mile coasting run down Titsey Hill there was a marked fall in brake efficiency due to fade, but this was not so great as we have experienced with some of the mass-produced 7-tonners and recovery of normal efficiency was almost complete when a further application was made after running for about 2 miles at normal speed. The handbrake



Attractive, comfortable and functional cab, with fair room for two on the far side; above, among the many commendable features of the Trader are a main chassis frame extending the full length of the body

an advantage on hills with larger vehicles and usually a point in favour of non-synchronesh gears. Cooling appeared entirely satisfactory, the average coolant temperature on a warm, very humid day being 136 deg. F. A check after a ½-mile climb when the engine was kept slopping in the highest gear possible showed a rise to only 150 deg.

For the fuel-consumption check over our standard 15-mile out-and-back route on A25 there was a fairly clear run through the villages of Westerham, Brasted and Sundridge, though being forced to follow a slower vehicle for about 4 miles on the return leg reduced the average speed and increased fuel consumption slightly. Even so, the figures achieved of 15.5 m.p.g. and 28.3 m.p.h. were well up to average for a 7-tonner over this route and probably indicate the likely return from the average 7-ton Trader in all fully loaded service on not-too-short journeys. A vehicle on long-distance trunking or part-loaded running could be expected to do 2 or 3 m.p.g. better. Our overall consumption test result of 12.4 m.p.g. for 66 miles of mainly hard driving, with numerous stops and a great deal of low-gear work in the various tests, probably represents about the worst result likely from a vehicle working most of the time fully loaded on short journeys.

With the not over-high specific lining area of just over 42 sq. in. per ton of recommended gross weight, the Trader brakes did very well, due to the use of moulded linings all round and adequate power from the vacuum servo. Of four emergency

alone held the vehicle comfortably on a gradient steeper than 1 in 5 and at about 25 m.p.h. recorded 33 to 38 per cent on the Tapley meter.

### Economical Maintenance

The top speed of the vehicle with the normal run up of the pneumatic governor was over 46 m.p.h.—it would be about 43 m.p.h. with the lower axle ratio—and this might be a bit low for operation in some countries overseas and on our own motorways later on. In such cases, the use of the higher ratio of the two optional two-speed axles gives a top speed of over 50 m.p.h.

Much thought has been given in the Trader design to keeping servicing time and costs to a minimum. Many of the engine components are common to both petrol and diesel engines and more between the four- and six-cylinder engines of each type. Few forward-control vehicle engines can be so quickly and easily removed, the differential unit comes out without disturbing the rest of the axle as does the gearbox without disturbing the engine. Allied to the Ford company's excellent provision of special service tools and fixtures and unrivalled parts service, it adds up to the minimum time out of service and the lowest possible cost of maintenance and repairs.

United Dominions Trust, Limited, announces that the Coventry office now operates from new premises at 1 Lansdowne Place, Coventry (telephone 40241).





## FODEN 1958

### New K-Type Eight-Wheeler and Tractor

#### INCREASED TWO-STROKE DIESEL POWER

**I**MPORTANT innovations are announced by Fodens, Limited, for the Commercial Vehicle Show which considerably extend the scope of this company's range of high-quality vehicles. What the company's design staff has aimed at and apparently achieved by the introduction of a new lighter-weight range and a number of new higher-capacity components is the ability to produce both standard and bespoke vehicles to meet the widest possible number of individual operator requirements from flow-production component lines without sacrifice of the traditional Foden standards of quality engineering.

The principal innovations are the K series chassis, comprising a lighter-weight eight-wheeler for 24 tons gross weight and a four-wheeled articulated tractor for 25 tons gross combined weight both designed specifically for operation in the United Kingdom; Mark III four- and six-cylinder two-stroke diesel engines developed from the earlier Foden units to give about 20 per cent more power

The standard composite cab for the K-type chassis is supplied without decorative beading apart from the Foden diamond on the front, and interior panelling, passenger seat, heater, direction indicators and offside windscreen wiper are also omitted. On the chassis, hub covers and front bumper are not supplied but these and all the items of cab equipment are available as optional extras. With a wheelbase of 13 ft. 7½ in., a body length of 24 ft. 6 in. can be accommodated and in standard trim the chassis and cab together have a registration weight of 5 tons 12 cwt. The usual allowances for fuel and water and the weight of an alloy platform body leave a margin for payload of about 17½ tons. With the four-speed gearbox and standard 7.5 to 1 axle ratio, a top speed of 38.2 m.p.h. is indicated, which would be increased to 49 m.p.h. with the optional overdrive gearbox.

#### Tractor Version

The companion K-series four-wheeled tractor, designated KTU and KGU6/25 and designed for



The new Foden K-type eight-wheeler for operation in this country at 24 tons gross

at 400 r.p.m. higher speed; and higher-capacity transmission units and axles which, with the new Foden engines, have permitted an increase in the capacity of the four- and six-wheeled dumpers, while a wider availability of proprietary engines has resulted in higher capacity and improved performance of a number of vehicles in the existing range.

#### 17½-ton Payload

The new eight-wheeler, designated KE6/24, represents a departure from previous Foden practice in that the chassis has been developed specifically for trunk haulage on good roads, which has permitted a reduction of the generous margins of strength required in chassis cleared for universal operation. In addition, the standard K-type vehicle is offered without the comprehensive ancillary equipment which might or might not be wanted by the operator (though all the usual items are available as optional extras) and consequently the standard vehicle will be quoted at a sub-

stantially lower price than the current Foden eight-wheeler and has the high payload capacity of over 17½ tons inside the legal 24-ton maximum. The vehicle is based on a main frame of pressed channel sidemembers 12 in. by 4 in. by ½ in. with crossmembers of a new design. No towing jaws are fitted but both front and rear jaws are available optionally.

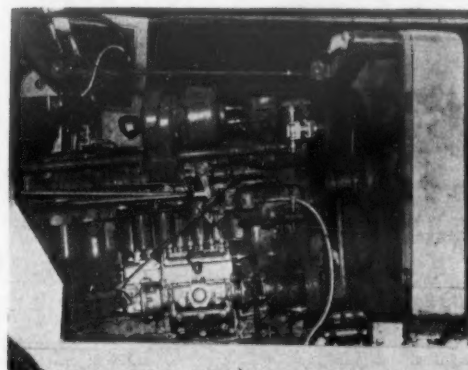
The vehicle is powered by the Foden FD6 Mark III two-stroke diesel engine (described in later paragraphs) rated at 150 b.h.p. at 2,400 r.p.m. and with a maximum torque of 367 lb./ft. at 1,500 r.p.m. The engine has three-point Silent-bloc mountings. Transmission is through a single dryplate clutch with moulded linings, Foden four-speed gearbox (with five-, six- and eight-speed overdrive units available optionally), Hardy-Spicer 1600-series propeller shafts and intermediate bearing and a Foden pressed-casing single-drive rear axle with 8½-in. heavy-duty differential gear. Double drive with 8-in. dia. gear is offered as an optional extra.

#### New Design of Spring

Front axles are Kirkstall units rated at 4 tons each and steering gear is the Foden standard recirculatory-ball type, with hydraulic assistance available optionally. The vehicle is mounted on leaf springs of a new design and all axles are fitted with cam-operated brakes with Bendix-Westinghouse air-pressure actuation. Internal drum dimensions are 16 in. by 3 in. at the front and 16½ in. by 7 in. at the rear. A Neate multiple-pull handbrake is mechanically connected to the bogie brakes through a compensating gear. Standard tyres are 9.00-20 on 10-stud wheels, there is a 32-gal. fuel tank and a 24-volt electrical system.

#### Mark III Engines

With the immediate introduction of the Mark III Foden two-stroke engines, production of the earlier units will cease. Development has been undertaken with the object of increasing output without increase of weight or cost and to simplify



Turbocharged Rolls-Royce 300-b.h.p. diesel engine installed in Foden FR6/45 dump truck for 28-ton payload

installation and maintenance. The result has been an increase in the six-cylinder engine from 126 b.h.p. at 2,000 r.p.m. to 150 b.h.p. at 2,400 r.p.m., with a maximum torque of 365 lb./ft. at 1,500 r.p.m. Corresponding improvement in the four-cylinder engine is from 84 to 100 b.h.p. The increase in engine speed range improves flexibility and as the installed weight is no greater, improves specific weight from 10 lb. per b.h.p. installed to 8½ lb., which compares with 12 to 15 lb. per b.h.p. of four-stroke diesels of similar power and widens the two-stroke advantage still further.

Modifications in the Mark III engines include a stiffer crankshaft with larger-diameter journals running in lead-indium flashed copper-lead thin-shell bearings, in a stiffened crankcase which allows a higher speed and higher operating lubricating oil temperature. This latter means that an oil radiator is no longer required, enabling the oil to be cooled by the cooling water in a compact heat exchanger mounted on the engine. Thus the water thermostat also controls the lubricating oil temperature permitting quick warming up and improving fuel consumption under low-load conditions.

(To be continued)

The Birmingham branch of the English Electric Co., Limited, has been moved from 75 New Street to larger premises at Pitmanston, Moseley, Birmingham, 13. The appliance service depot remains at 175 Tennant Street, Birmingham, 15.

A winner at Brighton



Photograph by courtesy of A.C.V. Gazette.

Winner of the Concours D'Elegance, Class D award in the 4th British Coach Rally this M.C.W. Fanfare is one of the fleet of Fanfare luxury coaches operated by South Wales Transport Co. Ltd., winner of the C.A.V. Trophy.



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## Humber's greatest Hawk

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Notable always for the highest standard of bodywork, Humber recently announced their greatest 'Hawk'. In this, as in many previous models, Saturn-Hivolt Surge Injector Welding equipment and Saturn Argon are used for many of the important welding operations. Saturn cutting and welding equipment has, for many years, played a big part in industry. The new Saturn-Hivolt Argon Arc Welding Machines offer the finest welding of aluminium and its alloys and stainless steel. Let us show you the complete range supplied and maintained from our many branches throughout the country.

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## 1958 at Farnborough

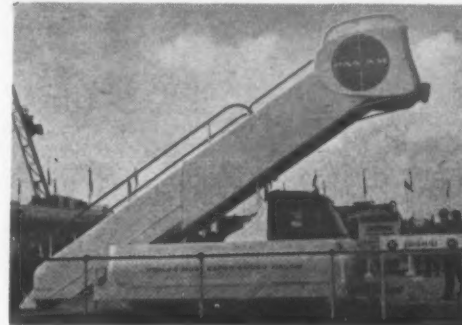
(Continued from page 5)

Limited. Designed initially in conjunction with the Ministry of Supply, the equipment, which has been in full scale production for some time, is now being sold in quantity to the United States. There it is being used to investigate and help solve some air traffic control radar problems, to record data from high-speed computers, and is also employed in several other capacities for recording c.r.t. information. A photographic record is made of the c.r.t. face, this is then developed by the equipment and projected on to a large screen. The processing cycle can take as little as 6 sec. and the film will then keep indefinitely. The overall success of the venture is a result of the close co-operation between Kelvin and Hughes and Ilford, Limited.

The Fuel Monitor, which is designed to augment the present stringent precautions taken to prevent

emphasis of the Decca Radar exhibits this year is on the application of radar to civil aviation. Ground radar equipment and the accurate navigational facilities offered by the Decca Navigator system appear side by side on the companies' joint stand in the main exhibition.

Decca Radar provide full details of its new DASR1 long-range civil surveillance radar. Introduced very recently this radar was specially developed for terminal use where high-speed high-altitude civil aircraft are being operated. Coverage extends above 40,000 ft. and to ranges well in excess of 100 miles. Operating in the 10-cm. band, this single equipment not only provides long and close coverage, from the radar horizon to well above the present limit of aircraft operating heights, but also has a high rotation rate and a narrow beam-



The Edghill mobile aircraft steps on an Austin chassis and, right, the Rellumit overwing dispenser



the slightest risk of contaminated fuel being fed into aircraft, is an automatic monitoring device which has reached an advanced stage of development and field trials are now in progress. The new monitor, which has been designed by the Shell Petroleum Company, in conjunction with Stream-Line Filters, Limited, of London, comprises a valve and sensitive element inserted in the main fuel stream to the aircraft. If contaminated fuel passes through the sensitive element the main valve will open and close, as the delivery valve is opened and closed, so that it is repeatedly exercised and any risk of it becoming frozen in the open position is eliminated. It is also constructed so that faulty maintenance, such as failure to replace the element, will prevent the valve from opening. The element itself is robust and casual handling cannot cause damage. The complete unit can be easily installed on existing fuellers or hydrant dispensers. The name Shell also appears on the ingenious Rellumit overwing refuelling motorised dispenser in the equipment park.

### Mobile Airport Units

The Edghill mobile steps, to the specification for which we referred last year, make their appearance on an Austin chassis in the colours of Pan American Airways. It should be added that the Kelvin and Hughes projector is also located in this part of the exhibition as well as a Blackburn low-pressure air starting trolley and a mobile turbo-alternator set suitable for emergency airfield lighting. The

width, providing a radar picture suitable for controlling aircraft precisely and accurately even at long range.

### Radar and Radio

Modern techniques such as variable polarisation to eliminate weather echoes and air target indication to suppress permanent ground echoes are built into this radar. The use of separate transmitters feeding a double reflector, back to back aerial array, is another interesting feature in design and it is this technique which allows the high performance to be extracted from a comparatively small radar station. The Westinghouse Brake and Signal Co., Limited, has been putting in a great deal of work in the field of semi-conductors and products include selenium rectifiers for aircraft power supplies, high temperature lightweight selenium rectifiers for h.t. supplies, and magnetic amplifier circuits.

Several comments on this year's Radio Show at Earls Court have referred to the effect upon sets of the use of printed circuits and transistors. Much of the progress in this field is, of course, attributable to the needs of aircraft and Farnborough shows how far some of this work is being taken. There is for example the Pye overspeed and rotation indicator for the Rolls-Royce Conway which is a very good instance of transistor application, while Standard Telephones and Cables has achieved some substantial weight reductions in its airborne equipment.



The new A.E.C. dump truck to be shown at Earls Court (above) and, right, the B.M.M.O. integral D9 type 72-seat double-decker



## INDUSTRIAL CLEANLINESS

### SAROUL

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## FOR EASIER DELIVERY

### The Dennis Paravan

#### ANGLED ENTRANCE A BOON TO DRIVER

PARCELS or small delivery, along with work of a kindred character, makes exhaustive demands of vehicle and driver alike and if the full capacity of the vehicle is to be employed it is necessary to extract the last ounce from it in terms of number of calls made. In practice this can only be achieved in cities or towns if the vehicle is highly manoeuvrable and mobile both in the depot (which may be cramped), on the street and in loading bays and yards, and if the driver also is able to effect each delivery with a minimum expenditure of time and physical effort. A minute saved on each delivery adds up to an hour or more when there are 60-80 calls to be made in the course of the working day.

#### The Background

As already indicated in our columns, Mr. R. B. Brittain, who is managing director of Essex Carriers, Limited, South Benfleet, has persuaded Dennis Brothers, Limited, to translate these desiderata into reality in the shape of the Dennis Paravan 3-tonner with front corner entrance and

front wheels, with its vertically disposed radiator receiving air through a horizontal duct below the cab floor. The frame, which is flat and parallel from the engine mountings rearwards, is dropped sharply in front of the front axle to give an entry step height of only 1 ft. 6 in. Body platform height is 3 ft. 6 in., without wheel arches, but is adjustable to loading bank heights. The tyre size is 7.00-20, 10-ply. The 600-650 cu. ft. body is approximately 15 ft. 9 in. long and 6 ft. 3 in. wide internally. A 10 ft. 6 in. wheelbase version is available.

#### Cab Features

A principal objective has been to design the vehicle about the driver's needs. Accordingly he has a cab which can be entered from either side and the driver can leave his seat and cross to the nearside door or step up into the body through a nearside sliding door. The cab floor is substantially at one level except for the stepped area inside the door, the adjustable driver's seat is not hedged about with handbrake or gear levers as these nestle below seat level on either side. The flat-topped engine cowl and spacious cab floor could be used



This is what the prototype Dennis Paravan 3-tonner looks like. In the right-hand view the cowl indicates engine position; also seen are the steps on nearside into body

walk-through cab with access to the body. His 30 or so vans, some of them articulated, serve Essex and parts of adjoining counties and are, of course, daily in the Metropolis.

The first Paravan has been delivered, the second (with sectioned glass fibre body panelling colour-impregnated with the arresting orange and black livery of Essex Carriers) is to be on show on the

for temporary storage of packages for the next delivery.

Central feature of the front-end layout is the roll-up corner door. This seemed a logical development as there was no room for a rear sliding door, nor was a jack-knife or hinged door deemed suitable. The door opening measures 6 ft. 3 in. high by 2 ft. 8 in. wide, ample for a driver saddled with a bulky package; the door itself is in four hinged sections, glazing being applied sufficiently to yield very good visibility from the driving position. When raised, the door glides on rollers in an arc above and behind the driver's head. One possible drawback to this arrangement is that in chilly or wet weather the door must be closed down after each delivery; a partial solution to this is seen as a cab heater laying a warm air curtain around the driver.

#### Running Components

The Perkins engine is four point mounted, at the front on Metalastik rubber sandwich blocks in shear, at the rear on Metacore resilient cone rubber blocks. The 10 in. clutch is hydraulically assisted and the drive is taken to a four-speed synchromesh gearbox as hitherto employed on the Stork chassis. The forward gear ratios are 5.7, 3.02, 1.71 to 1 and direct; reverse 6.98 to 1. Standard ratio for the hypoid-bevel rear axle is 6.83 to 1. Conventional springing is fitted, with 40 in. springs at the front and 50 in. springs at the rear.

Frame members, as already stated, are parallel and flat to the rear of the front platform; they are 6 in. deep and 2½ in. in width, of ½ in. steel and crossmembers are of top-hat section. The frame width is 2 ft. 6½ in. overall and fitted bolts are used throughout in its assembly. Hydraulically operated Girling two-leading shoe brakes with moulded facings are employed; front brakes are 14 in. by 2½ in., those at the rear 14 in. by 3½ in., the total frictional area thus being 322 sq. ft. The lighting system is 12 volt. The chassis and body as illustrated here together weigh approximately 2 tons 18½ cwt. in registration trim; gross running weight is therefore 5 ton 16 cwt. The overall length of this vehicle is 22 ft. 7 in., but the second version will be a few inches shorter thanks to a reduction in the front overhang.

A factory intended to produce nothing but steel-cord tyres is being planned by the Michelin Tyre Co., Limited. It will be built at Burnley, Lancashire, and production will begin in 1960.

A report from Milan states that under a six-year contract the Argentine Government is to acquire 280 diesel-electric locomotives from a group of Italian industrialists, for the sum of 1,000 million pesos.

#### ENGINE TYPE TEST

##### Lister Blackstone Meets BS2953

SUCCESSFUL completion by a Lister Blackstone Type ERS12T twin-bank diesel engine of an official type test in accordance with the new British Standard 2953:1958, "Diesel Engines for Rail Traction," has been announced by Lister Blackstone Rail Traction, Limited. The test was conducted by Messrs. Livesey and Henderson, consulting engineers, London, and was at traction ratings of 1,100 b.h.p. continuous and 1,200 b.h.p. intermittent.

#### Use of Standard Parts

The twin-bank engines are designed to use moving parts standard throughout the Lister Blackstone ERT and ERST in-line range. This range includes the ER6T engines installed in the standard 350-h.p. 0-6-0 diesel-electric shunters of British Railways. Spare parts stocks for maintenance of the in-line engines are thus applicable for maintenance of the twin-bank engines; a great simplification of maintenance problems.

#### RAILWAY FREIGHT HANDLING

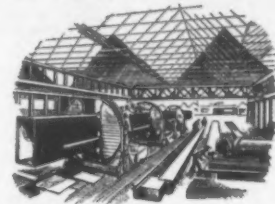
(Continued from page 7)

tank road trailers, encounters many obstacles in the European loading gauge and still more in Britain if the road vehicles are not to be unduly limited in dimensions. The French show the S.E.G.I. system, with its "drawbridge wagon" adaptation, where the road vehicle height is reduced by dropping the carrying axle into a well in the railway truck, so that the road trailer wheel rests only 10½ in. above rail level. The French U.F.R. system, with guiding wheels on the road trailers which pick up the sides of the special rail platform trucks, is well known. The Germans show the Gliederzug well-wagon experiment for carrying road vehicles and the Hucklepack arrangement with jacks under the transferable body so that the road tractor and carrying bogie can be run under the body to collect it at the railhead.

Crane handling of conventional containers and the variations of the well-known D.A.F. system, used in the Benelux countries, Germany, Switzerland and Sweden, are also demonstrated.

## The birth of New Techniques

Continually the frontiers of science advance, and our knowledge becomes more exact. At the same time the result is that new techniques are developed, used and discarded in favour of those yet newer. In steel structures it is now



possible to take advantage of the economies possible when rigid designs are made. Welding has made many of these designs possible. Cleveland's important contribution has been in

helping to make fabrication for such structures practicable and economic. Manipulators and handling equipment have been specially designed to reap full benefit of the automatic welding in which the Company specialises.

AN INVITATION Our services are always available in design, in detailing, and in the costing and construction of all types of structures.

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AND CIVIL ENGINEERS

THE CLEVELAND BRIDGE & ENGINEERING CO. LTD. DARLINGTON, ENGLAND.

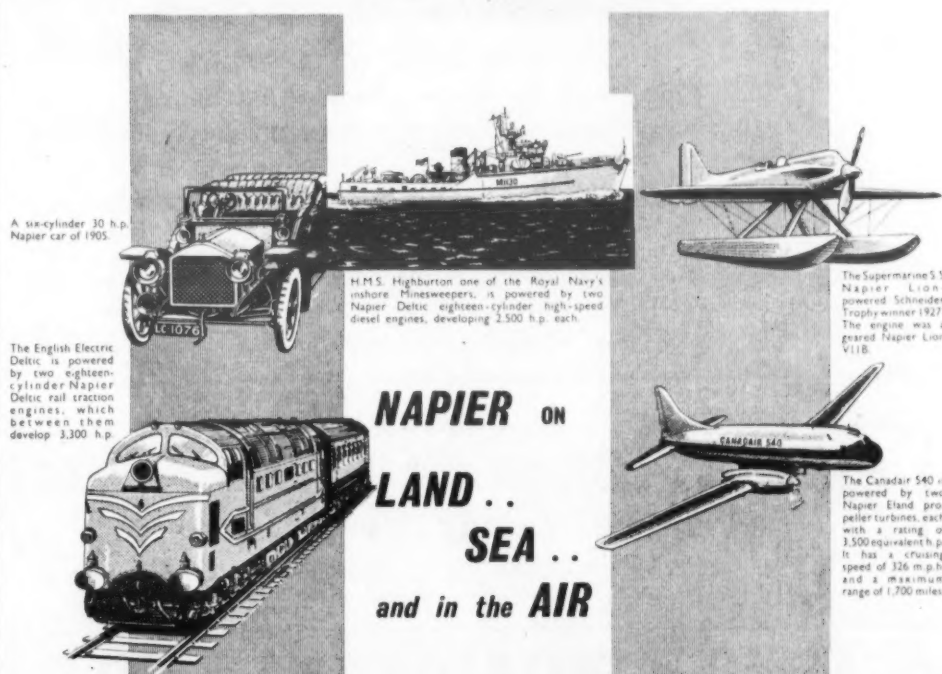


There is ample room for the driver to step in and out with packages

Dennis stand at the Commercial Motor Show later this month. Both bodies are constructed by the Guildford manufacturer. Dennis has had considerable success in the past with parcels van operators—some years ago there were no fewer than 95 or so of the ubiquitous 45 cwt. forward control model in the service of two London parcels businesses and today the underfloor-engined Stork 3-tonner is popular in various aspects of delivery work.

#### Chassis

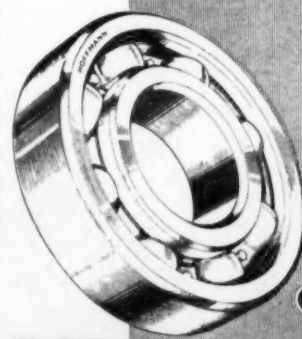
There is nothing unorthodox about the 11 ft. 9 in. wheelbase Paravan chassis, which differs from the Stork in that the Perkins P4V 55 b.h.p. diesel engine is mounted vertically between the



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SEA...  
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THE HOFFMANN MANUFACTURING CO. LTD., CHELMSFORD, ESSEX



# The first

## relay interlocking panel on the Southern Region of British Railways, is installed at Keymer Crossing

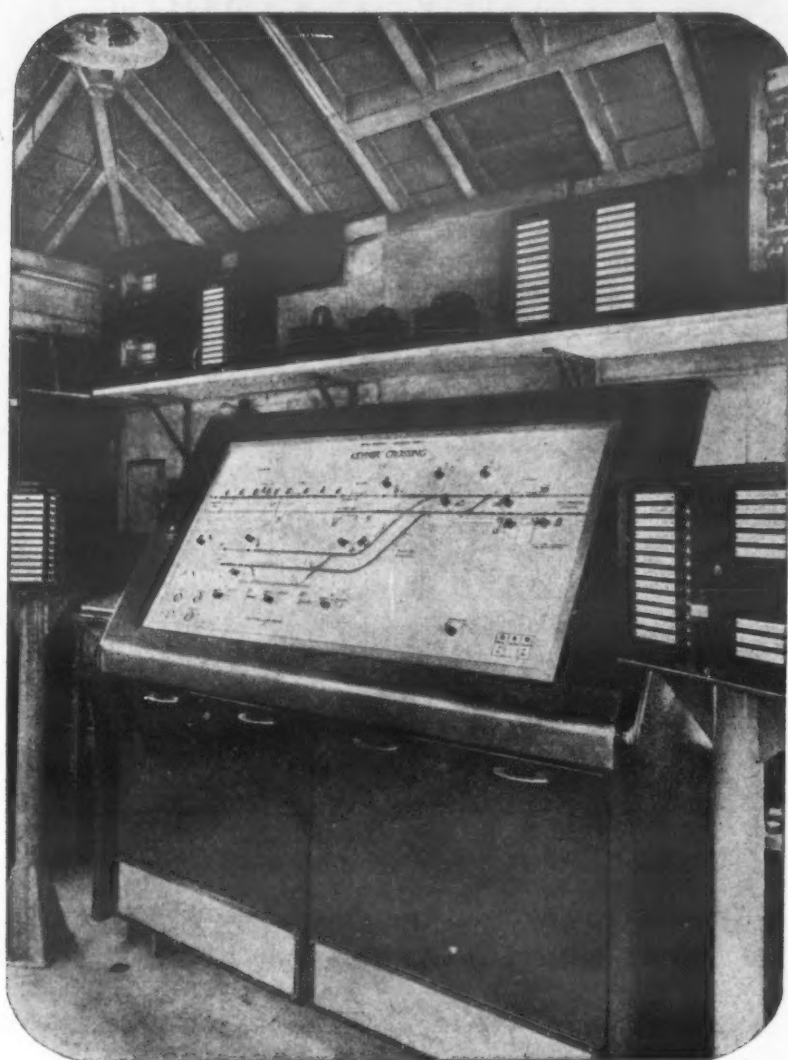


Photo by courtesy of British Railways, Southern Region

Supplied by



to the requirements of Mr. L. J. Boucher, Signal Engineer of the Southern Region, this control panel replaces the former mechanical signal frame

Westinghouse Brake and Signal Co. Ltd., 82 York Way, London, N.1

Associated in India with

Saxby &amp; Ferrer (India) Private Ltd., Calcutta

Associated in Australia with

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<b>LLANELLY</b> Morfa Works, Llanelly LLANELLY 4302	<b>BRISTOL</b> 70 Prince Street BRISTOL 22315	<b>NOTTINGHAM</b> Pavilion Building, Pavilion Road West Bridgford NOTTINGHAM 83481
<b>LONDON</b> 22-24 Bermondsey Wall West, S.E.16 BERMONDSEY 4833		

### CLASSIFIED ADVERTISEMENTS

#### SITUATIONS VACANT

TECHNICAL Assistants, experienced, required by the Midland "Red" Motor Services at their Central Works, Waterworks Road, Edgbaston, Birmingham.

Applications are invited from suitably qualified persons for these posts. Applicants must be 21 years of age or over and in good health.

They should possess as a minimum acceptable examination the Ordinary National Certificate or other appropriate examination of similar or superior standard, and they must also have had Workshop and Drawing Office experience. They must be capable drivers though not necessarily in possession of a P.S.V. Licence.

Free travel facilities to and from duty on the Company's vehicles and other travel concessions.

Applications must be submitted in own handwriting and should state age, and contain details of education, technical qualifications and past experience, and be addressed to: The Chief Engineer, Birmingham and Midland Motor Omnibus Co., Limited, Midland House, 1 Vernon Road, Edgbaston, Birmingham, 16.

LOCOMOTIVE Manufacturing Company in the North of England have an immediate vacancy for a man between 22 and 30 years of age in their Sales and Service Department. Applicant must have locomotive shop experience and technical education up to Higher National Certificate standard. Good salary to suitable applicant. Pension scheme. Write in first instance giving full details of age, technical and practical experience to Box No. 3795, MODERN TRANSPORT, 3-16 Woburn Place, London, W.C.1.

#### EDUCATIONAL

THE City of London College will hold evening classes beginning on September 22, to prepare students for the Graduateship and Associateship examinations for the Institute of Transport. Courses are also provided in Shipping and Forwarding, for Shipping Executives, and in Dutch, French, German, Italian, Portuguese and Spanish, and lunch-hour classes in French, German, Italian and Spanish. Enrolment may be made at the College, Moorgate, E.C.2, on September 15 (last session's students only) and 16, 5-7.30 p.m.; and 17, 5-7 p.m. Further details of the courses are available from the Secretary of the College.

### IMPORTANT CONTRACTS

#### British Locomotives for E.A.R.

IN intense international competition, the English Electric Co., Limited, has won a contract for eight 1,840-h.p. diesel-electric locomotives for East African Railways and Harbours. The locomotives will be powered by single English Electric 12-cylinder charge-cooled SVT diesel engines and have a 1 Co-Co 1 wheel arrangement and a maximum service speed of 45 m.p.h. They will be capable of one-man operation and will weigh approximately 100 tons in working order, with a maximum axle load of 13.5 tons. The superstructure will be carried on two four-axle bogies, each bogie having three driving axles and one guiding axle, the latter being carried in a subsidiary truck. The bogies have been specially designed to reduce flange forces and flange wear will consequently be kept to a minimum. The locomotives, which are designed for metre gauge, will have a continuous tractive effort loading of 44,500 lb., and will be used on the main-line services between the Port of Mombasa, Nairobi and Kampala. English Electric has recently supplied 35 2,000-h.p. locomotives to Rhodesia and 26 1,500-h.p. units to Malaya, both of which countries operate 3 ft. 6 in. gauge lines.

#### Rapier Cranes for Cunard

Ransomes and Rapier, Limited, has recently received an order for six Rapier 4 standard diesel-electric mobile cranes from the Cunard Steam-Ship Co., Limited, Liverpool, for use in shifting cargo to and from ship's side to dock sheds and for loading and unloading railway wagons and lorries.

#### N.A.T.O. Orders Radar from Marconi's

Radar equipment to a value of approximately £1 million has been ordered by the Norwegian Ministry of Defence from Marconi's Wireless Telegraph Co., Limited, as part of the N.A.T.O. Infrastructure programme for a co-ordinated radar defence of member countries. The order includes two radome control and reporting stations, each of high-power and long-range, with newly developed entirely self-contained transmitters.

#### Eastern Region Contracts

The Eastern Region of British Railways announces the following contracts:

Metropolitan-Vickers-G. R. S. Limited, London, W.C.2, for supply and installation of signalling and automatic train control equipment between Gas Factory Junction and 20-mile post, in connection with the electrification of the London, Tilbury and Southend Line.

W. J. Carns, Limited, London, E.15, for feeder station at Stratford and track sectioning cabin at Ilford.

R. F. King, Limited, Romford, for feeder stations at Chadwell Heath and Gidea Park.

#### South Wales Docks Contracts

The following contracts have been placed recently by the British Transport Commission (South Wales Docks):

Stelcon (Industrial Floors), Limited, for paving No. 1 section, South Quay, Newport Docks.

G. Percy Trentham, Limited, for construction of sub-structure and associated works for new transit shed, South Dock, Newport.

Scottish Cables, Limited, for h.t. and l.t. cables for sub-station and quay, North Dock, Newport.

#### North Eastern Region Contracts

Recent contracts placed by the North Eastern Region of British Railways include:

D. Mitchell and Co., Limited, Keighley, for one 10½ in. lathe for Gateshead, Chaytors Bank.

W. and J. R. Watson, Limited, Edinburgh, for widening of bridges on Aline-Pilmoor East Coast main line.

W. G. Search, Limited, Leeds, for four air compressors.

Consolidated Pneumatic Tool Co., Limited, Gateshead, for four air compressors.

Matterson, Limited, Rochdale, for one 7½-ton hoist at York North motive power depot.

W. T. Glover and Co., Limited, Manchester, for medium-voltage cable for Huddersfield re-signalling.

#### Southern Region Contracts

Recent contracts placed by the Southern Region of British Railways include the following:

West's Piling and Construction Co., Limited, West Drayton, for foundation piling for Walworth Road coal depot reconstruction.

The Walter Kidde Co., Limited, Greenford, for installation of automatic fire protection at Factory Junction, Swanley Junction, Ramsgate and Margate signal boxes.

Campbell and McGill, Limited, Winchester, for reconstruction of Cattle Creep Bridge, Burghclere, and Basingstoke Station Bridge.

Redpath Brown and Co., Limited, London, W.C.2, for fabrication and erection of steelwork for Walworth Road coal depot reconstruction.

### TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

September 12—Union of South Africa.—South African Railways for four 30-seat single-deck buses, petrol or diesel engines. Tenders, endorsed "Tender No. F.7428: Passenger Vehicles," to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. (ESB/21182/58.)

September 16—Pakistan.—Department of Supply and Development for 10 double sets of 300 amp-hr. NICKEL-ALKALINE BATTERIES. Photocopies of tender documents from Export Services Branch, B.O.T., price 8s. (ESB/20488/58.)

September 18—Korea.—International Co-operation Administration for 38 four-wheel-drive PICK-UP TRUCKS of varying capacity. Photocopies of tender documents from Export Services Branch, B.O.T., price 16s. (ESB/21218/58/ICA.)

September 18—Burma.—Union Purchase Board for three 5-ton (4.5 cu. yd.) timber-bodied three-way tipping lorries and one 5-ton equipped insulated light-alloy MEAT VAN 14 ft. by 6 ft. by 6 ft. 6 in. high. Tenders for both petrol and diesel engines to the Director-General, Union of Burma Purchase Board, St. John's Road, Rangoon. (ESB/21481/58.)

### SHIPPING and SHIPBUILDING

#### Fissile v. Fossil Fuel

PRESENTING a paper on nuclear propulsion to the engineering section of the British Association annual meeting in Glasgow this week, Mr. J. Edwards, head of the Naval Section, Atomic Energy Research Establishment, Harwell, said that when considering the application of nuclear power to propulsion purposes, two main questions had to be answered: Was it feasible and was it worth doing? Generally the answer to the first was yes—provided one was prepared to pay for it. The answer to the second depended upon the approach. Strategically, the wide application of nuclear power would lessen our dependence on overseas oil supplies. If applied to all new tanker construction for the United Kingdom until 1965 it might save 1½ million tons of oil per year and would thus be an incentive to use fissile fuel and save fossil fuel.

But by that date we should probably have to import the equivalent of some 40 million tons of oil per year to provide for other power requirements such as electricity generation, road and air transport. A third approach to the question was the commercial one—would its use enable one to do a specific job as, or cheaper than, doing the same job with conventional machinery? It was certainly not yet obvious that nuclear propulsion would permit any commercially attractive operation to be carried out which could not be performed by conventional means.

The feasibility and practicability of propelling ships by nuclear power was not in doubt. The performance of the U.S.N. submarine *Nautilus*, which steamed 60,000 miles on her first core charge, equivalent to some two million gallons of diesel oil, had amply demonstrated this. The fact that it cost nearly 20 times as much to do this as with ordinary fuel was not significant in terms of the operational advantages conferred on the submarine. The cost of dealing with the radiation problems, however, so added to the capital costs that these tended to dominate the issue. The type of ship most able to make use of the advantages and offset the disadvantages was one which had a high load factor, i.e., required little time for loading and unloading, had long hauls enabling her to spend a high proportion of her time at sea, and for which fuel bills were heavy. The tanker offered greatest prospects with its 80 per cent usage factor.

#### Newcomer to Coast Lines Fleet

THE latest addition to Coast Lines fleet for coasting and Irish cargo services is the m.v. *Somerset Coast*. The delivery of this vessel marks a further step in the fleet modernisation policy. Built by Clelands (Successors), Limited, at Willington Quay, she is 1,730 tons deadweight and is fitted with McGregor type steel hatch covers on the three hatches, having electrically driven deck machinery. The latest Marconi, Decca and Guard-rail radio and navigational aids have been installed.

#### Sorry Tale at Colombo

NATIONALISATION of the Port of Colombo was expected to solve all the ills that the port was subject to during the last few years, instead the port continues to be the same headache that it was. In fact, says a correspondent, the position seems to have worsened since nationalisation which was proclaimed with fanfare and gusto on August 1. Mr. M. F. de S. Jayaratne, chairman of the Port Cargo Corporation, which took over, says there have been stoppages of work averaging one day; up to the middle of August, not less than fifteen stoppages have occurred.

#### T.U.C. and Port Industry

DELEGATES at the Trades Union Congress in Bournemouth this week were advised by the policy committee to reject a demand for nationalisation of the port transport and shipping industry in the United Kingdom. The demand had come from the Watermen, Lightermen, Tugmen and Bargemen's Union, which had tabled a resolution asking that Congress realise the importance of a national co-ordinated transport system and calling on the next Labour Government to take the necessary steps to nationalise the whole of the port transport and shipping industry.

### FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

#### Oldham and Son

Group profits of Oldham and Son, Limited, for the year ended March 31 were £441,451; net profit of the parent was £164,295 (£220,471), the decline being attributable to the special development undertaken. Dividend is 17½ per cent (same).

#### Coast Lines

The year 1957 resulted in a consolidated trading profit for Coast Lines, Limited, of £1,145,808 (£1,549,876), the second half of the year being responsible for a moderate decline in many sections of the business, mainly due to increased operating costs. Traffic on the whole was reasonably encouraging, but many traditional voyages showed only a trivial surplus over operating costs. Net group profit was £742,226 (£800,414), that attributable to Coast Lines, Limited, being £484,594 (£575,735). The ordinary dividend for the year is 10 per cent (same), made up of two interims but no final dividend.

### OFFICIAL NOTICES

#### CROWN AGENTS

##### ASSISTANT ENGINEER (MECHANICAL)

ASSISTANT Engineer (Mechanical) required for their London Office by the Crown Agents for Oversea Governments and Administrations for appointment normally to pensionable establishment on probation for two years. Salary scale £805 x £25 — £855 x £30 — £1,005 x £40 — £1,165 x £45 — £1,210 x £40 — £1,250. The £805 minimum is linked to entry at age 25 and is subject to increase at rate of one increment for each year above that age up to 34. Fully qualified officers at least 27 years old may be eligible for special increase of £75 after two years service. Prospects of promotion. Candidates should have passed qualifying examination A.M.I.Mech.E. or equivalent examination and have served apprenticeship or pupillage in the locomotive works of either British Railways or a locomotive manufacturer. Subsequent drawing office experience in the design of locomotives and/or diesel engines and/or cranes is essential, coupled with a sound knowledge of modern workshop practice. Ability to write concisely will be an advantage since duties include

preparation of contract specifications and technical correspondence as well as design calculations and examination and approval of drawings. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2A/50235/MQ.

#### BRADFORD CITY TRANSPORT

##### UNIFORM CLOTHING

Tenders are invited for:

(a) THE MAKING-UP OF UNIFORMS and for the supply of.

(b) UNIFORM HATS.

Tender forms and specifications may be obtained upon application to the General Manager, Forster Square, Bradford, 1, where samples may be examined. Tenders must reach me not later than the first post on Saturday, September 20, 1958.

W. H. LEATHAM,  
Town Clerk.

Town Hall,

Bradford, 1.



## SOCIAL AND PERSONAL

### New Chairman for C.I.E.

A NEW chairman has been appointed to Coras Iompair Eireann. He is Dr. C. S. Andrews, managing director of Bord na Mona (the Irish Turf Board). Dr. Andrews assumed his new post on September 1 and relinquished his former appointment. On October 1 C.I.E. takes over that part of the Great Northern Railway within the Republic of Ireland. Mr. T. C. Courtney, former chairman of C.I.E., asked leave to resign the office but remains a part-time member of the new board. Two members of the G.N.R. board, Mr. William McMullen and Mr. F. Molony, have become members of the C.I.E. board. The other members of the newly-constituted C.I.E. board are Messrs. L. Ferris, T. P. Hogan and J. T. O'Farrell, all of whom were already board members.

At a B.M.C. board meeting last week, Sir Leonard Lord announced that in view of the expansion of the responsibilities of the group as a whole it was desirable that the offices of chairman and managing director should be separated. Accordingly, Mr. G. W. Harriman is to become sole managing director while Sir Leonard is made



Mr. G. W. Harriman

executive chairman of the group. Mr. Harriman began his engineering career with Morris Motors at the Hotchkiss works in Coventry in 1923 and remained with that company in various capacities until he joined the Austin Motor Co., Limited, in 1940. He was awarded the O.B.E. in 1943. Mr. Harriman was given a seat on the Austin board in 1945, was appointed deputy managing director in 1950. He was awarded the C.B.E. in 1951. Mr. Harriman joined the board of the British Motor Corporation on its formation in February, 1952, and became deputy managing director. He was made deputy chairman and joint managing director with Sir Leonard Lord in 1956. Considerable responsibility for the reorganisation of the Longbridge works was his, as also the development of the new assembly lines brought into operation in 1951.

Several presentations were made at the Portslade works of Southdown Motor Services, Limited, to Mr. Henry R. Lane, chief engineer, and to Mrs. Lane, to mark Mr. Lane's retirement after 28 years' service. His successor is Mr. W. Hall, formerly chief engineer, Potteries Motor Traction Co., Limited.

Mr. E. S. Ely, M.I.Mech.E., M.I.E.E., docks mechanical and electrical engineer, Southampton Docks, B.T.C., retired on August 31. As a result of reorganisation, Mr. J. H. Jellett, O.B.E., M.I.C.E., docks engineer, Southampton Docks, has been appointed chief docks engineer as from September 1, in which capacity he is responsible for the control of the whole of the civil, mechanical and electrical engineering organisation at Southampton Docks.

The London Midland Region of British Railways announces the following appointments:

Mr. G. J. Aston to be line traffic officer (operating), Derby.  
Mr. W. O. Reynolds to be assistant operating officer, Euston.  
Mr. N. Thornley to be assistant (works contracts), supplies and contracts manager's office, Euston.  
Mr. D. R. Barnacle to be assistant line traffic officer ( motive power), Crewe.  
Mr. P. C. Cooper to be assistant line traffic officer ( motive power), Derby.  
Mr. A. J. Perry to be assistant to commercial officer (passenger general), Euston.  
Mr. E. R. Dunnett to be assistant to commercial officer (freight rates and charges), Euston.  
Mr. F. J. Burge to be district operating superintendent, Rugby.  
Mr. M. H. Matthews, to be assistant district commercial manager, Leicester.  
Mr. T. Windle, to be assistant district goods manager (sales), Bolton.  
Mr. E. Maiden, to be assistant district passenger manager (sales), Liverpool.  
Mr. F. O. Dann, to be assistant district operating superintendent, Leicester.  
Mr. J. M. A. Greig, to be assistant district operating superintendent, Birmingham (M).  
Mr. L. B. Williams, to be recruiting officer (Birmingham area), Birmingham (New Street), L.M./W.R.

Mr. F. P. Arnold, a member of the Tilling Group management board of the British Transport Commission, will be retiring on December 31 after more than fifty years' service in the road passenger transport industry. He began his transport career with Wolverhampton Corporation in 1906. In 1913 he entered the service of the Kidderminster and District Lighting and Traction Co., Limited, which was controlled by the British Electric Traction Co., Limited, and also operated trams and buses. He served in H.M. Forces in the 1914-18 war, returning in 1919 to an appointment with the Birmingham and Midland Motor Omnibus Co., Limited under Mr. L. G. Wyndham Shire. In 1932 he joined Thomas Tilling, Limited, as chief engineer at Bull Yard depot, Peckham, where Tilling's London fleet of buses and a large number of haulage vehicles were controlled. Shortly afterwards, Mr. Arnold was transferred to the Thomas Tilling head office and his duties extended to various provincial bus operating companies. In 1948, when Thomas Tilling, Limited, sold its interests in provincial buses to the British Transport Commission, he became a member of the Tilling Group management board, being a director of many of the subsidiary bus companies. In addition to resigning from the management board, Mr. Arnold will relinquish his chairmanships of United Automobile Services, Limited, Crosville Motor Services, Limited, West Yorkshire Road Car Co., Limited, and Brighton, Hove and District Omnibus Co., Limited, as well as his appointments to the boards of other operating companies in the Tilling Group.

### Death of G.S.N. Chairman

WE regret to record the death of Mr. Ian MacKay Hooper, M.Inst.T., chairman and managing director of the General Steam Navigation Co., Limited, and also of the Moss Hutchison Line and subsidiaries. Mr. Hooper was 56. He was educated at the Royal Naval Colleges at Osborne and Dartmouth and from 1923 was with Mackinnon Mackenzie and Co., Limited, in India. He became a G.S.N. director in 1934 but on the intervention of the 1939-45 war he was commissioned in the R.N.V.R. In 1954 he was appointed chairman of the company. Mr. Hooper was also a P. and O. director, a former member of the Port of London Authority, a member of council of the Chamber of Shipping, a liveryman of the Worshipful Company of Shipwrights, an officer of the French Order of Maritime Merit and a knight-commander in the Order for Merits to the Italian Republic.

Mr. W. H. Rees has been made sales manager of Bristol Aero-Engines, Limited.

Mr. R. E. Lawler retired from the position of district commercial officer, Ipswich, on August 27. He joined the general manager's office of the Great Eastern Railway in 1919. In 1944 he was made district goods and passenger manager at Ipswich and was appointed district commercial officer on January 1 this year.

Presentation to seven London B.R.S. drivers of 1956 safe driving awards last week included 25-year brooches and crosses, 30-year brooches and a 36-year silver bar. The awards were presented by Major-General G. N. Russell, C.B., C.B.E., chairman of British Road Services, in the divisional manager's office at Carlow Street, N.W.1. He was supported by the divisional manager, Mr. A. J. Wright, M.B.E., J.P. Mr. George W. Choat, aged 64, of B.R.S. (Contracts), Limited, Victoria Park branch, received the 36-year silver bar.

Subsequent to the recent appointment of Mr. E. R. Hollands as director and general manager, certain directorial changes have taken place within A.C.V. Sales, Limited, to promote closer integration with the manufacturing companies within the group. A new director, Mr. J. D. Slater, A.C.A., has been appointed to the board and he will combine the duties of director and commercial manager with effect from September 1. Mr. L. C. Parsons, A.C.A., A.C.I.S., who was previously secretary and accountant to A.C.V. Sales, Limited, has been appointed secretary of Park Royal Vehicles, Limited, and Mr. J. Ford, secretary of A.E.C., Limited, now assumes responsibility for the secretaryship of A.C.V. Sales.

Mr. I. Owen, M.B.E., who has been appointed chairman of the South Wales area Traffic Commissioners, Licensing Authority, and Deputy Transport Commissioner in the new disposition for Wales announced in our August 16 issue, has spent most of the last 30 years in the administration of the Road Traffic Acts, firstly in the office of the Traffic Commissioners for the North Western traffic area at Manchester but during the war period he was in the North Wales office of the Deputy Regional Transport Commissioner for Wales at Caernarvon. In 1950 he was appointed clerk to the Traffic Commissioners in the South Wales traffic area and has continued in that position.



Mr. I. Owen

Retirement of Mr. Harlow H. Curtice as president and chief executive officer of the General Motors Corporation took effect from September 1. He has been president and chief executive officer since February, 1953, and a member of the General Motors organisation for more than 44 years. Mr. Albert Bradley, who has been chairman of the board since April, 1956, has also retired after a 39-year career. Mr. Frederick G. Donner has been elected to the position of chairman of the board and chief executive officer and Mr. John F. Gordon becomes president and chief operating officer.



Sir John Benstead, deputy chairman of the British Transport Commission, presents the B.T.C. absolute punctuality competition shield for passenger train punctuality in 1957 to Mr. G. W. Stewart, assistant general manager, Scottish Region. The corresponding shield for freight train working was presented at the same time to Mr. C. P. Hopkins, general manager of the Southern Region.

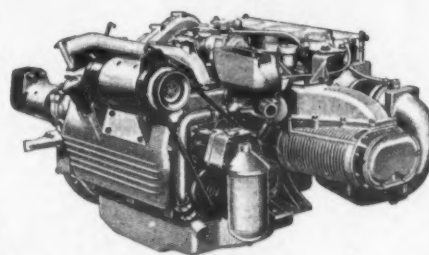
Mr. H. Greig, M.B.E., assistant to chief commercial manager (modernisation and productivity), Scottish Region, retired on August 31 having completed 50 years' railway service. He began his railway career in 1908 with the former Caledonian Railway at Airdrie. In 1948 he was attached to the commercial superintendent's office in the Scottish Region for special duties, in 1951 was appointed general assistant (freight) to the commercial superintendent and in 1955 assistant in modernisation and productivity, the position he now vacates. He was awarded the M.B.E. in 1955.

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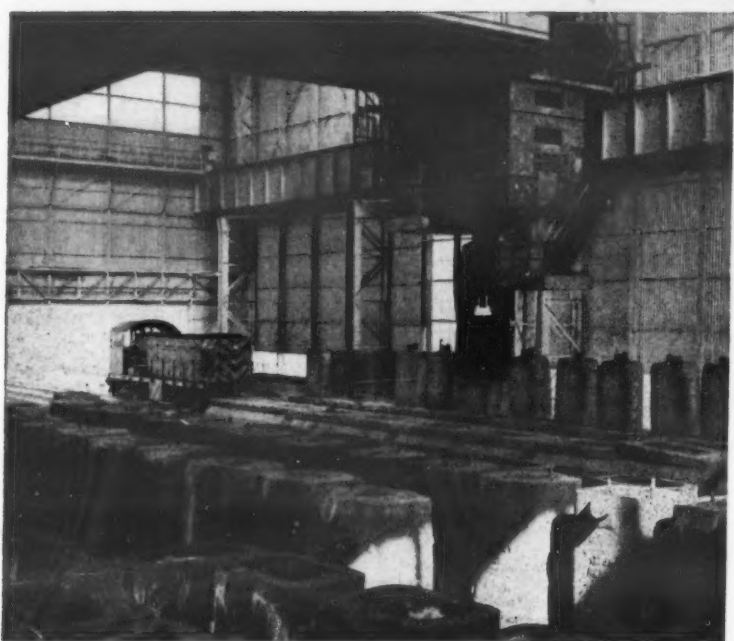
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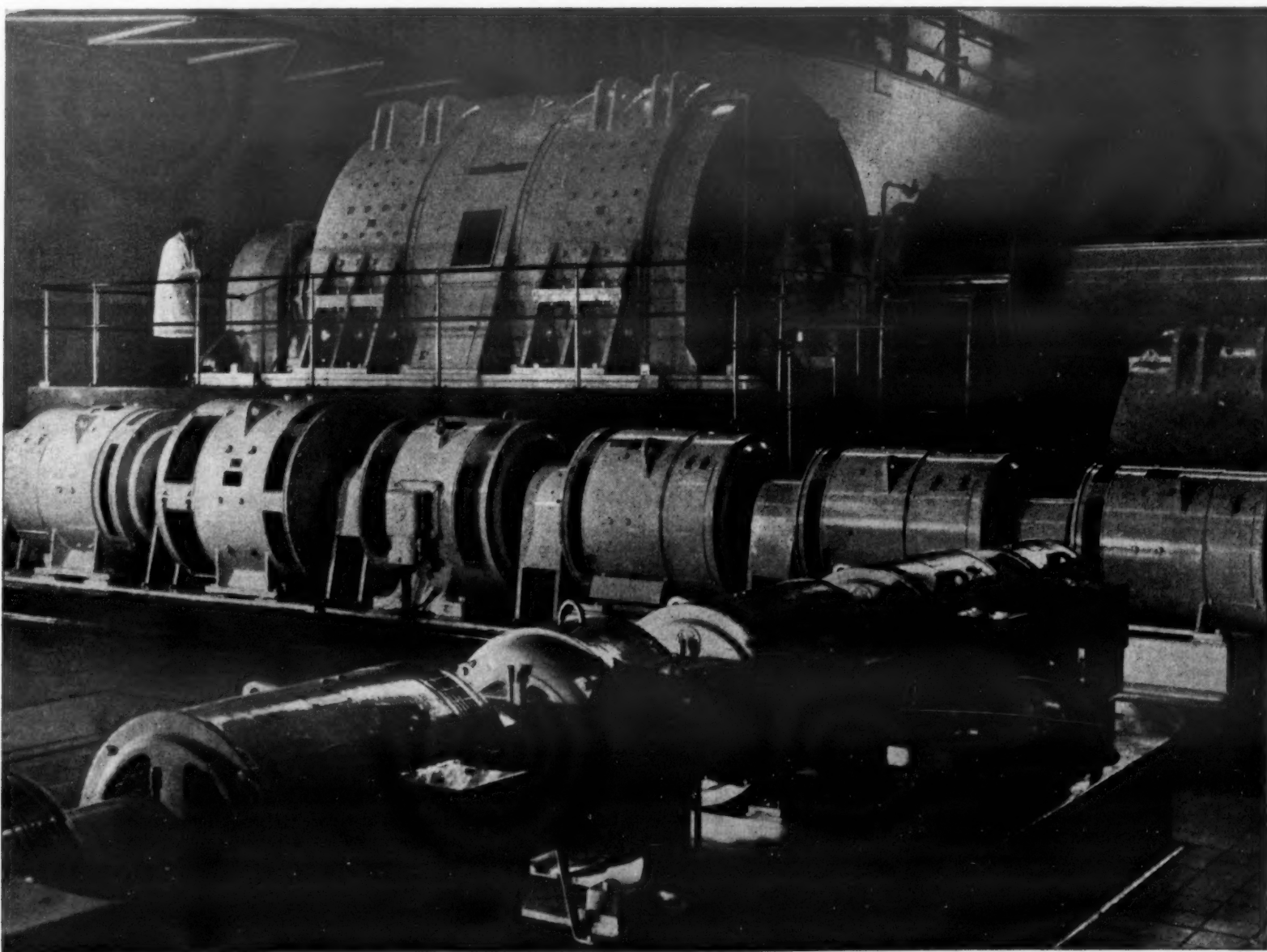
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